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MATERIALS MANAGEMENT REVIEW



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NATCOM / SCALE 2017



Mr. G.K. Singh - National President took over the Baton of the Institute from the outgoing National President - Mr. O P Longia during NATCOM 2017 held at Bangalore

NATCOM - SCALE 2017, held on 16-17 November, 2017 at Vivanta by Taj, M G Road, Bangalore



Lighting of Lamp by Dignitaries L To R - Mr. M.S Shankar Narayanan, Convenor, Mr. Srinivas V Rao, Br Chairman, Mr. PM Biddappa, Convenor, MR. G Kumar Naik, IAS, CMD - KPCL, Ms. T.S Ushasri Sr.VP and MD, Manhattan Associates, Dr. Annadurai - Director ISSC - Chief Guest, Mr. D P Nagendra Kumar Principal Additional Directorate General - Intelligence for GST, Dr. C Subbakrishna - Chairman NATCOM 2017, Mr. O P Longia - National President IIMM, Mr. D Subrmani - VP South.



Mr. S B Lovekar honoured
- LIFE TIME ACHIEVEMENT Award
by dignitaries



Lt. Gen. Giri Raj Singh S M - Receiving the
Distinguished Member Award by
Mr. O P Longia National President



Mr. O P Longia National President handing over a
memento to Ms. T S Ushasri Sr. VP and MD, Manhattan
Associates - Key Note Speaker - NATCOM SCALE 2017



Mr. V Harish NC Member handing over a memento to
Prof. G Raghuram, Director IIM-B

From the Desk of The National President



Dear Professionals Colleagues & Members,

Greetings from IIMM!

At the outset, I take this opportunity to express my heartiest thanks to all of you for unanimously electing me as National President of the IIMM for the period 2017-2019.

This is my first message to you having taken over as National President of this great institute – IIMM. My sincere thanks to all former National Presidents and other Senior/Distinguish Members of the Institute. They are the visionary people of this Institute and have been the guiding spirits for all Teams at national level.

Materials Management Review (MMR) is the Professional Journal for Materials and Supply Chain Management Industry in India. It seeks to be the voice of the industry - and also the eyes and ears with in-depth coverage of the latest concepts, trends and opinions. I shall be reaching you regularly through MMR to seek your innovative inputs and participation.

Our challenges are many but main focus to improve the image of our Institute and give it a big exposure in the Industry, increase corporate membership, introduce many more courses that will attract more students towards IIMM while meeting the most recent need of industries to make them more competitive. More efforts towards consultancy and placement activities would also be required.

IIMM Bangalore Branch hosted the NATCOM 2017 in a very grand manner and SCM Professionals across the country participated in the mega annual event of IIMM. There were Galaxy of Speakers from India. This two day national convention conducted on 16-17 November 2017. This event provides a platform to share and gain knowledge, understand the latest trends and tools, development and advances happening around the world in the area of supply chain management.

I, too, along with my Team, look forward for your innovative ideas and able guidance for us, to take the institute to newer heights. While, I assure you to put our best efforts to come true to your expectations,

I wish you all the very best and look forward to your views and suggestions for delivering an improved value to our membership.

Wishing you all the very best till we interact next.

With warm regards,

A handwritten signature in black ink, appearing to read 'G. K. Singh', written in a cursive style.

G. K. SINGH

National President - IIMM

e.mail : s_gksingh@yahoo.co.in

From the Desk of Chief Editor



Dear Members,

As per the Assocham – reports, logistics costs in India are one of the highest, at around 14 percent of GDP which is due to inefficient connectivity, poor Rail – Road network, poor storage and warehousing, lack of better infrastructure facilities etc. whereas the logistics cost in developed countries with better infrastructure is around 6-8 percent of the GDP. High logistics cost reduces the competitiveness of Indian goods both in domestic as well as export market,” the statement said.

Govt. has estimated that, Logistics Sector will grow substantially to USD 360 Billion from current USD 115 Billion by 2032. An **Assocham-Resurgent India** joint study states that India can save up to USD 50 billion if logistics cost is brought down from 14 percent to 9 percent.

Realising the importance of the logistics sector to promote trade, Indian Government is developing new strategies to overcome this issue of higher logistics cost by attracting more investments into transport and logistics sector, as a part of which, Government has granted infrastructure status to Logistics Industry covering cold chain and warehousing facilities.

The decision will enable the logistics sector to access infrastructure lending at easier terms with enhanced limits, longer tenor funds from insurance companies and pension funds and also make it eligible to borrow from the India Infrastructure Financing Co. Ltd (IIFCL). The government has created a separate special secretary-level post in the Commerce Ministry to coordinate with all the ministries concerned and departments.

A notification regarding amendment in the existing framework, has been issued by Department of Economic Affairs widening the Infrastructure sub-sectors from “Transport” to “Logistics & Transport”. Roads and bridges, ports, shipyards, inland waterways, airport, railway track, tunnels, viaducts, terminal infrastructure including stations and adjoining commercial infrastructure are all part of the transport and logistics classification. Urban public transport and logistics infrastructure are also part of it.

It is now clearer about the minimum investment and area requirement under the tag of Infrastructure as each category have been spelt out. A Multi-modal Logistics Park comprising Inland Container Depot (ICD) need to have a minimum investment of INR 50 crore along with a minimum area of 10 acres, A Cold Chain Facility must have a minimum investment of INR 15 crore and cover a minimum area of 20,000 sq.ft. and Warehousing Facilities must have a minimum INR 25 crore investment and a minimum area of 100,000 sq.ft.

Implementation of GST coupled with Infrastructure status to Logistics sector shall provide the impetus needed for the Logistics Industry. With GST coming in, Multimodal logistics parks providing facilities like warehousing, storage, cold chains, ICD's, which will make it a one-stop destination for traders and exporters to manage their transactions in an efficient manner.

In 2017, India's logistics performance improved from 54 to 35 under World Bank Logistics Performance Index (LPI), stating that Logistics sector is performing well and Infrastructure status being awarded to Logistics Sector by Govt. will boost Job Employment also.

A handwritten signature in black ink, appearing to be 'M.K. Bhardwaj', written in a cursive style.

(DR. M.K. BHARDWAJ)



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THE NEXT MANUFACTURING DESTINATION

On the threshold of major reforms India is poised to become the third-largest economy of the world by 2030.

India is on the threshold of major reforms and is poised to become the third-largest economy of the world by 2030. In the words of our Hon'ble Prime Minister, India offers the 3 'Ds' for business to thrive— democracy, demography and demand. Add to that a tech-savvy and educated population, skilled labour, robust legal and IPR regime, and a strong commitment to calibrated liberalization — India is a destination that German investors cannot overlook. India's manufacturing sector has evolved through several phases - from the initial industrialisation and the license raj to liberalisation and the current phase of global competitiveness. Today, Indian manufacturing companies in several sectors are targeting global markets and are becoming formidable global competitors. Many are already amongst the most competitive in their sectors.

DEMOGRAPHICS ADVANTAGE:

- The country is expected to rank amongst the world's top three growth economies and amongst the top three manufacturing destinations by 2020.
- Favourable demographic dividends for the next 2-3 decades. Sustained availability of quality workforce.
- Strong consumerism in the domestic market.
- Strong technical and engineering capabilities backed by top-notch scientific and technical institutes.
- The cost of manpower is relatively low as compared to other countries.

INFRASTRUCTURE:

- **Industrial Parks:** Every state in India has developed industrial parks for setting up of industries.
- **National Investment & Manufacturing Zones:** NIMZ is a combination of production units, public utilities, logistics, residential areas and administrative services. It would have a processing area, where manufacturing facilities, along with associated logistics and other services and required infrastructure will be located, and a non-processing area, to include residential, commercial and other social and institutional infrastructure.
- **Special Economic Zones:** India has also developed SEZs that are specifically delineated enclaves treated as foreign territory for the purpose of industrial,

service and trade operations, with relaxation in customs duties and a more liberal regime in respect of other levies, foreign investment.

- **Sector specific clusters:** like electronic manufacturing clusters, mega food parks etc: The government of India has been promoting the development of sector specific parks.
- **Country specific zones:** The country also have few dedicated zones for industrial units from countries for example Neemrana Japanese Zone etc.
- **Industrial corridors:** The Government of India is developing the Delhi-Mumbai Industrial Corridor (DMIC) as a global manufacturing and investment destination utilizing the 1,483 km-long, high-capacity western Dedicated Railway Freight Corridor (DFC) as the backbone. The objective is to increase the share of manufacturing in the GDP of the country and to create smart sustainable cities where manufacturing will be the key economic driver.
- **Other four corridors:** planned include Bengaluru Mumbai Economic Corridor (BMEC); Amritsar - Kolkata Industrial Development Corridor (AKIC); Chennai Bengaluru Industrial Corridor (CBIC), East Coast Economic Corridor (ECEC) with Chennai Vizag Industrial Corridor as the first phase of the project (CVIC).

INCENTIVES OFFERED FOR MANUFACTURING:

- **Sector specific initiatives:** The government of India provides sector specific subsidies for promoting manufacturing for example in order to boost manufacturing of electronics, the Govt. of India provides capital subsidy of up to 25% for 10 years.
- **Area based incentives:** Incentives are provided for units in SEZ/NIMZ as specified in respective acts or setting up project in special areas like North East Region, Jammu & Kashmir, and Himachal Pradesh & Uttarakhand.
- **Incentives under income tax act:**
- **Investment Allowance:** The Government of India in its Union Budget 2014-15, has provided investment allowance at the rate of 15 per cent to a manufacturing company that invests more than US\$ 4.17 million in any year in new plant and machinery.
- **Deductions:** Several additional deductions are provided for instance deduction equal to 30% of

additional wages paid to new regular workmen employed by the assessee over and above 50 workmen.

- **R&D Incentives:** Higher weighted deductions of 200% provided for expenditure related to R&D subject to fulfilment of conditions.
- **Export Incentives:** Under the foreign trade policy exports have been provided with several incentives like duty drawback, duty remission schemes etc.
- **State Incentives:** Apart from above each state in India offers additional incentives for industrial projects. Some of the states also have separate policies for textile sector. Incentives are in areas like rebated land cost; relaxation in stamp duty exemption on sale/lease of land; power tariff incentives; concessional rate of interest on loans; investment subsidies / tax incentives; backward areas subsidies; special incentive packages for mega projects.

RECENT INITIATIVES & BUDGET ANNOUNCEMENTS FOR PROMOTING MANUFACTURING:

EASE OF DOING BUSINESS:

- The corporate tax rate for companies registered in India to go down from 30% to 25% of net profits in a phased manner over the next four years starting from FY 16-17.
- An expert committee to examine the possibility and prepare a draft legislation where the need for multiple prior permission can be replaced by a pre-existing regulatory mechanism.
- Goods and Services Tax proposed to be implemented from April 01, 2016.
- The process of applying for Industrial License (IL) and Industrial Entrepreneur Memorandum (IEM) has been made online.
- Initial validity period of Industrial License has been increased to three years from two years, also, two extensions of two years each in the initial validity of three years of the Industrial License shall now be allowed up to seven years. This will give enough time to licensees to procure land and obtain the necessary clearances/approvals from authorities.
- Operationalizing the e-BIZ portal: Through eBiz portal, a business user can fill the eForms online/offline, upload the attachments, make payment online and submit the forms for processing of the department.
- Labor reforms:
- A dedicated ShramSuvudha Portal: The portal would allot Labour Identification Number (LIN) to nearly 6 lakhs units and allow them to file online compliance for 16 out of 44 labour laws

- An all-new Random Inspection Scheme: Utilizing technology to eliminate human discretion in selection of units for Inspection, and uploading of Inspection Reports within 72 hours of inspection mandatory
- **Universal Account Number:** Enables 4.17 crore employees to have their Provident Fund account portable, hassle-free and universally accessible
- **Apprentice ProtsahanYojana:** Will support manufacturing units mainly and other establishments by reimbursing 50% of the stipend paid to apprentices during first two years of their training
- Department of Industrial Policy and Promotion has identified various areas and action points on ease of doing business index/indicators have been prepared for assessing the overall business performance of the country as well as States/Union Territories.
- Government has undertaken a number of steps to improve Ease of Doing Business in India. A large number of components of Defence Products' list have been excluded from the purview of Industrial Licencing. The application process for Industrial Licence and Industrial Entrepreneur's Memorandum has been made easy by simplification of form and making the process online 24X7. The validity period of the Industrial Licence and security clearance from Ministry of Home Affairs has been increased. The process of registration with Employees' Provident Fund Organization and Employees' State Insurance Corporation has been made on line and real-time. Process of obtaining environment and forest clearances has been made online. The Department of Industrial Policy and Promotion has advised Ministries and State Governments to simplify and rationalize the regulatory environment through business process reengineering and use of information technology. 14 Government of India services have been integrated with the online single window eBiz portal

SKILL INDIA: 'SKILL INDIA' - a multi-skill development programme has been initiated with a mission for job creation and entrepreneurship for all socio-economic classes. It endeavours to establish an international equivalent of the Indian framework on skill development, creating workforce mobility and enhancing youth employability.

SECTOR OPPORTUNITIES: INDIA PROVIDES GREAT AVENUES FOR INVESTMENTS IN VARIOUS SECTORS.

- **Defence:** India is expected to spend US\$ 40 billion on defence purchases over the next 4-5 years. The opening of the strategic defence sector for private sector participation will help foreign original equipment manufacturers to enter into strategic partnerships with Indian companies and leverage the domestic markets and also aim at global

business.

- **Automotive:** India is expected to become a major automobile manufacturing hub and the third largest market for automobiles by 2020, according to a report published by Deloitte. India is currently the seventh-largest automobiles producer in the world with an average annual production of 17.5 million vehicles, and is on way to become the fourth largest automotive market by volume, by 2015.
- **Engineering:** The Indian Engineering sector has witnessed a remarkable growth over the last few years driven by increased investments in infrastructure and industrial production. The engineering sector, being closely associated with the manufacturing and infrastructure sectors of the economy, is of strategic importance to India's economy. Growth in the sector is driven by various sub-sectors such as infrastructure, power, steel, automotives, oil & gas, consumer durables etc.
- **Textiles:** The Indian textiles industry, currently estimated at around US \$108 billion, is expected to reach US \$ 141 billion by 2021. The Indian textile industry has the potential to grow five-fold over the next ten years to touch US\$ 500 billion mark on the back of growing demand for polyester fabric, according to a study by Wazir Advisors and PCI Xylenes and Polyester. The US\$ 500 billion market figure consists of domestic sales of US\$ 315 billion and exports of US\$ 185 billion.
- **Chemicals:** The Indian chemical industry stands as the third largest producer in Asia and 12th in world, in terms of volume. This industry could grow at 14 per cent per annum to reach a size of US\$ 350 billion by 2021. India accounts for approximately 7 per cent of the world production of dyestuff and dye intermediates and is currently the world's third largest consumer of polymers and fourth largest producer of agrochemicals.
- **Food Processing:** The Indian food industry stood around (US\$ 39.03 billion) in 2013 and is expected to grow at a rate of 11 per cent to touch (US\$ 64.31 billion) by 2018.
- **Leather:** India's leather industry has witnessed robust growth, transforming from a mere raw material supplier to a value-added product exporter. In fact, today, almost 50 per cent of India's leather business comes from international trade.
- **Pharmaceuticals:** The Indian pharmaceutical industry is estimated to grow at 20 per cent compound annual growth rate (CAGR) over the next five years, as per India Ratings, a Fitch Group company. Indian pharmaceutical manufacturing facilities registered with US Food and Drug Administration (FDA) as on March 2014 was the highest at 523 for any country outside the US. We expect the domestic pharma market to grow at 10-12 per cent in FY15 as compared to 9 per cent in

FY14, as per a recent report from Centrum Broking. The domestic pharma growth rate was 11.9 per cent in October 2014, highlighted the report.

- **Electronics:** The electronics market is one of the largest in the world and is anticipated to reach US\$ 400 billion in 2022 from US\$ 69.6 billion in 2012. The market is projected to grow at a compound annual growth rate (CAGR) of 24.4 per cent during 2012-2020.

ELECTRONICS SYSTEMS DESIGN & MANUFACTURING

- Heavy industries
- Machineries
- Engines
- Tools
- Steel products
- Industrial equipment's
- Electrical and Home Appliances
- Builders Hardware
- Railway and related products and equipment's
- The Indian electronics system design and manufacturing (ESDM) industry is at a huge inflection point. From being predominantly consumption driven, the Indian ESDM industry has a major potential to become a design led manufacturing industry. The industry is one of the fastest growing sectors in the country. The Indian ESDM industry was estimated to be \$68.31 billion in 2012. The impressive guidance between 2011 and 2015 for this industry is expected to result in a Compound Annual Growth Rate (CAGR) of 9.88 percent. The corresponding size of the industry by 2015 is anticipated to be \$94.2 billion. Reasons to Invest
- **Huge consumption market:** The corresponding size of the industry by 2015 is anticipated to be \$94.2 billion. Large demand to be generated due to government schemes like the National Knowledge Network (NKN), National Optical Fibre Network (NOFN), tablets for the Education sector, a digitisation policy and various other broadband schemes.
- **Attractive Incentives:** The central and state government have announced scheme of incentives for manufacturing of electronics. Incentives include up to 25% capital subsidy on capital expenditure, giving land at rebated cost, reimbursement of central and state duties, income tax exemptions on setting up in special economic zones, assistance in skill development etc.
- **Availability of the infrastructure:** The government is promoting development of electronics manufacturing clusters throughout the country to provide world class infrastructure and facilities. The Government of India has also received the applications of two consortia (IBM, Jaypee Group, TowerJazz; ST Microelectronics, HSMC) to establish 2 semiconductor wafer fabrication units in Gujarat

and Noida with the aim of operating at 20 nm process node within two years of initial operations and reaching a capacity of at least 40,000 WSPM of at least 300 mm size.

§ **Availability of Skilled Manpower:** India has the third largest pool of scientists and technicians in the world. Skilled manpower is available in abundance in Semiconductor Design and Embedded Software. India also has strong design and R&D capabilities in auto electronics and industrial electronics.

§ **Investment Opportunities:**

§ Setting up of Electronics Manufacturing Clusters.

§ Semiconductor Wafer Fabrication (FAB).

§ Electronic products like telecom equipment, LED's, consumer electronics, medical electronics, automotive electronics etc.

§ Electronic Components.

§ Semiconductor Design.

§ Electronics Manufacturing Services (EMS).

Defence Indian defence sector is at the cusp of an inflexion point wherein the future growth will be propelled by indigenous manufacturing both for domestic & global clients. The sector will witness strong growth over the next decade due to its current size, longevity, and competitive advantages. As per FICCI-Centrum report the market opportunity for Indian companies (PSU + Pvt) will grow 7x from \$6bn in FY14 to \$41bn by FY22. Reasons to Invest

§ India has some of the basic ingredients (large and relatively low cost (Frugal) engineering talent pool, comfort of western nations with India from a geopolitical perspective) to exploit this opportunity but it will have to significantly improve on some others (technology, lack of a defence manufacturing ecosystem, etc). Also, the nature of warfare is becoming more software intensive, which plays into the strength of India considering IT sector growth in the past two decades.

§ India may become a large sourcing base for components and sub-systems in the years to come for foreign systems integrators this will happen as these companies face price pressure in the years ahead as the large arms consumers – US and the western developed world – seek cut backs on defence spending to improve their financial position and rein in fiscal deficits and debt/GDP ratios. Already a number of JVs have been signed between Indian and foreign players.

§ The offset clause (which stipulates that 30-50% of the armament purchase value should be spent on buying Indian components, sub-systems and products) introduced in capital purchase agreements with foreign defence players will ensure that an ecosystem of suppliers is built domestically.

§ Indigenization will take centre stage and gather pace going forward. Government has taken a number of steps in this direction. DPP 2013 furthers the cause of developing domestic defence sector by prioritizing procurement from Indian companies and buying from global companies as the last resort.

§ Recent Government Initiatives:

§ 53% of the defence items for manufacturing by private sector have been de-licensed and dual use items having military as well as civilian applications if not specifically mentioned deregulated.

§ FDI cap raised to 49% and beyond 49% wherever it is likely to result in access to modern and 'state-of-art' technology in the country.

§ The procurement process would be made more efficient, time bound and predictable so that the industry can plan its investment and R & D well in advance to meet the requirement of our armed forces.

§ Online filing and increase in validity of industrial license.

§ Streamlining procedure in case of defense exports.

There is a big opportunity in the defence sector for both domestic and foreign investors. We have the third largest armed force in the world with an annual budget of about US\$ 38 billion and 40% of this is used for capital acquisition. In the next 7-8 years, we would be investing more than US\$ 130 billion in modernization of our armed forces.

AUTOMOBILES : Demographically and economically, India's automotive industry is well-positioned for growth, servicing both domestic demand and, increasingly, export opportunities. A predicted increase in India's working-age population is likely to help stimulate the burgeoning market for private vehicles. Rising prosperity, easier access to finance and increasing affordability is expected to see four-wheelers gaining volumes, although two wheelers will remain the primary choice for the majority of purchasers, buoyed by greater appetite from rural areas, the youth market and women. Reasons to Invest:

§ Over the next 20 years, India will be a part of the big global automotive triumvirate.

§ Growth factors - growth in demand on back of rising income, expanding middle class and young population base, large pool of skilled manpower and growing technology; The country enjoys natural advantage and is among the lowest cost producers of steel in the world.

§ Tractor sales in the country are expected to grow at CAGR of 8-9% in the next five years, upping India's market potential for international brands.

§ Two-wheeler production has grown from 8.5 Million units annually to 15.9 Million units in the last seven

years. Significant opportunities exist in rural markets.

- § India's car market has the potential to grow to 6+ Millions units annually by 2020.
- § The emergence of large automotive clusters in the country: Delhi-Gurgaon-Faridabad in the north, Mumbai-Pune-Nashik- Aurangabad in the west, Chennai-Bengaluru-Hosur in the south and Jamshedpur-Kolkata in the east.
- § Global car majors have been ramping up investments in India to cater to growing domestic demand. These manufacturers plan to leverage India's competitive advantage to set up export-oriented production hubs.
- § An R&D hub: strong support from the government in the setting up of NATRIPcentres. Private players such as Hyundai, Suzuki, GM are keen to set up an R&D base in India.
- § Tata Nano is a sterling example of Indian frugal engineering and is being positioned as a mobilizer of the young generation.
- § Electric cars are likely to be a sizeable market segment in the coming decade.
- § Multinational automotive plants in India rank among the top across the world in terms of their productivity and quality.
- § Largest tractor manufacturer; 2nd largest two wheeler manufacturer; 2nd largest bus manufacturer; 5th largest heavy truck manufacturer; 6th largest car manufacturer; 8th largest commercial vehicle manufacturer.
- § Investment Opportunities:
 - § Two-wheelers (motorcycles, geared and ungeared scooters and mopeds),
 - § Three wheelers,
 - § Commercial vehicles (light, medium and heavy),
 - § Passenger cars,
 - § Utility vehicles (UVs) and Tractors.

Production in 2013-14 – Passenger vehicles – 3.1 million; two wheelers – 16.9 million; commercial vehicles – 0.7 million; three wheelers – 0.8 million

ENGINEERING : The Indian Engineering sector has witnessed a remarkable growth over the last few years driven by increased investments in infrastructure and industrial production. The engineering sector, being closely associated with the manufacturing and infrastructure sectors of the economy, is of strategic importance to India's economy. Growth in the sector is driven by various sub-sectors such as infrastructure, power, steel, automotives, oil & gas, consumer durables etc. The country now joins an exclusive group of 17

countries who are permanent signatories of the WA, an elite international agreement on engineering studies and mobility of engineers. Reasons to Invest:

- § The engineering sector in India attracts immense interest from foreign players as it enjoys a comparative advantage in terms of manufacturing costs, technology and innovation.
- § Capacity creation in sectors such as infrastructure, power, mining, oil & gas, refinery, steel, automotive, and consumer durables driving demand in the engineering sector.
- § The government has an ambitious mission of 'Power for all by 2012' and has planned capacity additions of 120 GW in the 12th Five-Year Plan.
- § Governmental infrastructure projects such as Golden Quadrilateral and the North-South and East-West corridors fuelled growth in the engineering sector
- § India has Comparative advantage vis-à-vis peers in terms of manufacturing costs, market knowledge, technology and creativity.
- § More than 2,500 firms in the engineering sector have ISO 9000 accreditation.
- § The engineering sector is a growing market. Current spending on engineering services is projected to increase to US\$ 1.1 trillion by 2020.
- § The Indian engineering sector is of strategic importance to the economy owing to its intense integration with other industry segments. The sector has been de-licensed and enjoys 100 per cent FDI. With the aim to boost the manufacturing sector it has announced scheme for capital goods sector.
- § Engineering exports from India are expected to cross US\$ 70 billion in FY 15 registering a growth of 15 per cent over the previous fiscal, as demand in key markets such as the US and the UAE is on the rise. Apart from these traditional markets, markets in Eastern and Central European countries such as Poland also hold huge promise.
- § The Government of India in its Union Budget 2014-15, has provided investment allowance at the rate of 15 per cent to a manufacturing company that invests more than US\$ 4.17 million in any year in new plant and machinery. The government has also taken steps to improve the quality of technical education in the engineering sector by allocating a sum of Rs 500 crore (US\$ 78.8 million) for setting up five more IITs in the states of Jammu, Chhattisgarh, Goa, Andhra Pradesh and Kerala.

Source: Make in India Website



RECOMMENDATIONS MADE ON GST RATE CHANGES BY THE GST COUNCIL AS PER DISCUSSIONS IN ITS 23RD MEETING ON 10TH NOVEMBER, 2017 HELD AT GUWAHATI

- a) In the meeting held today, that is 10th November, 2017, the Council has recommended major relief in GST rates on certain goods and services. These recommendations spread across many sectors and across commodities.
- b) As per these recommendations, the list of 28% GST rated goods is recommended to be pruned substantially, from 224 tariff headings [about 18.5% of total tariff headings at 4-digit] to only 50 tariff headings including 4 headings which have been partially reduced to 18% [about 4% of total tariff headings at 4-digit].
- c) Further, the Council has recommended changes in GST rates on a number of goods, so as to rationalise the rate structure with a view to minimise classification disputes.
- d) The Council has also recommended issuance of certain clarifications to address the grievance of trade on issues relating to GST rates and taxability of certain goods and services.
- e) On the services side also, the Council recommended changes in GST rates to provide relief to aviation & handicraft sectors and restaurants.
2. Major recommendations of the Council are summarised below.
- (I) Pruning of list of 28% rated goods:** The Council has recommended reduction in GST rate from 28% to 18% on goods falling in 178 headings at 4-digit level (including 4 tariff heading that are partially pruned). After these changes, only 50 items will attract GST rate of 28%.
- a) Goods on which the Council has recommended reduction in GST rate from 28% to 18% include:**
- Wire, cables, insulated conductors, electrical insulators, electrical plugs, switches, sockets, fuses, relays, electrical connectors
 - Electrical boards, panels, consoles, cabinets etc for electric control or distribution
 - Particle/fibre boards and ply wood. Article of wood, wooden frame, paving block
 - Furniture, mattress, bedding and similar furnishing
 - Trunk, suitcase, vanity cases, brief cases, travelling bags and other hand bags, cases
 - Detergents, washing and cleaning preparations
 - Liquid or cream for washing the skin
 - Shampoos; Hair cream, Hair dyes (natural, herbal or synthetic) and similar other goods; henna powder or paste, not mixed with any other ingredient;
 - Pre-shave, shaving or after-shave preparations, personal deodorants, bath preparations, perfumery, cosmetic or toilet preparations, room deodorisers
 - Perfumes and toilet waters
 - Beauty or make-up preparations
 - Fans, pumps, compressors
 - Lamp and light fitting
 - Primary cell and primary batteries
 - Sanitary ware and parts thereof of all kind
 - Articles of plastic, floor covering, baths, shower, sinks, washbasins, seats, sanitary ware of plastic
 - Slabs of marbles and granite
 - Goods of marble and granite such as tiles
 - Ceramic tiles of all kinds
 - Miscellaneous articles such as vacuum flasks, lighters,
 - Wrist watches, clocks, watch movement, watch cases, straps, parts
 - Article of apparel & clothing accessories of leather, guts, furskin, artificial fur and other articles such as saddlery and harness for any animal
 - Articles of cutlery, stoves, cookers and similar non electric domestic appliances
 - Razor and razor blades
 - Multi-functional printers, cartridges
 - Office or desk equipment
 - Door, windows and frames of aluminium.
 - Articles of plaster such as board, sheet,
 - Articles of cement or concrete or stone and artificial stone,
 - Articles of asphalt or slate,
 - Articles of mica
 - Ceramic flooring blocks, pipes, conduit, pipe fitting
 - Wall paper and wall covering
 - Glass of all kinds and articles thereof such as mirror, safety glass, sheets, glassware
 - Electrical, electronic weighing machinery
 - Fire extinguishers and fire extinguishing charge
 - Fork lifts, lifting and handling equipment,
 - Bull dozers, excavators, loaders, road rollers,
 - Earth moving and levelling machinery,
 - Escalators,
 - Cooling towers, pressure vessels, reactors

- Crankshaft for sewing machine, tailor's dummies, bearing housings, gears and gearing; ball or roller screws; gaskets
- Electrical apparatus for radio and television broadcasting
- Sound recording or reproducing apparatus
- Signalling, safety or traffic control equipment for transports
- Physical exercise equipment, festival and carnival equipment, swings, shooting galleries, roundabouts, gymnastic and athletic equipment
- All musical instruments and their parts
- Artificial flowers, foliage and artificial fruits
- Explosive, anti-knocking preparation, fireworks
- Cocoa butter, fat, oil powder,
- Extract, essence and concentrates of coffee, miscellaneous food preparations
- Chocolates, Chewing gum / bubble gum
- Malt extract and food preparations of flour, groats, meal, starch or malt extract
- Waffles and wafers coated with chocolate or containing chocolate
- Rubber tubes and miscellaneous articles of rubber
- Goggles, binoculars, telescope,
- Cinematographic cameras and projectors, image projector,
- Microscope, specified laboratory equipment, specified scientific equipment such as for meteorology, hydrology, oceanography, geology
- Solvent, thinners, hydraulic fluids, anti-freezing preparation

b) Goods on which the Council has recommended reduction in GST rate from 28% to 12% are:

- Wet grinders consisting of stone as grinder
- Tanks and other armoured fighting vehicles

(II) Other changes/rationalisation of GST rates on goods:

a) 18% to 12%

- i. Condensed milk
- ii. Refined sugar and sugar cubes
- iii. Pasta
- iv. Curry paste, mayonnaise and salad dressings, mixed condiments and mixed seasoning
- v. Diabetic food
- vi. Medicinal grade oxygen
- vii. Printing ink
- viii. Hand bags and shopping bags of jute and cotton
- ix. Hats (knitted or crocheted)
- x. Parts of specified agricultural, horticultural, forestry, harvesting or threshing machinery
- xi. Specified parts of sewing machine
- xii. Spectacles frames
- xiii. Furniture wholly made of bamboo or cane

b) 18% to 5%

- i. Puffed rice chikki, peanut chikki, sesame chikki, revdi, tilrevdi, khaza, kazuali, groundnut sweets gatta, kuliya
- ii. Flour of potatoes put up in unit container bearing a brand name
- iii. Chutney powder
- iv. Fly ash
- v. Sulphur recovered in refining of crude
- vi. Fly ash aggregate with 90% or more fly ash content

c) 12% to 5%

- i. Desiccated coconut
- ii. Narrow woven fabric including cotton newar [with no refund of unutilised input tax credit]
- iii. Idli, dosa batter
- iv. Finished leather, chamois and composition leather
- v. Coir cordage and ropes, jute twine, coir products
- vi. Fishing net and fishing hooks
- vii. Worn clothing
- viii. Fly ash brick

d) 5% to nil

- i. Guar meal
- ii. Hop cone (other than grounded, powdered or in pellet form)
- iii. Certain dried vegetables such as sweet potatoes, maniac
- iv. Unworked coconut shell
- v. Fish frozen or dried (not put up in unit container bearing a brand name)
- vi. Khandsari sugar

e) Miscellaneous

- i. GST rates on aircraft engines from 28%/18% to 5%, aircraft tyres from 28% to 5% and aircraft seats from 28% to 5%.
- ii. GST rate on bangles of lac/shellac from 3% GST rate to Nil.

(III) Exemption from IGST/GST in certain specified cases:

- i. Exemption from IGST on imports of lifesaving medicine supplied free of cost by overseas supplier for patients, subject to certification by DGHS of Centre or State and certain other conditions
- ii. Exemption from IGST on imports of goods (other than motor vehicles) under a lease agreement if IGST is paid on the lease amount.
- iii. To extend IGST exemption presently applicable to skimmed milk powder or concentrated milk, when supplied to distinct person under section 25(4) for use in production of milk for distribution through dairy cooperatives to where such milk is distributed through companies registered under the Companies Act.
- iv. Exemption from IGST on imports of specified goods by a sports person of outstanding eminence,

subject to specified conditions

v. Exemption from GST on specified goods, such as scientific or technical instruments, software, prototype supplied to public funded research institution or a university or IISc, or IITs or NIT.

vi. Coverage of more items, such as temporary import of professional equipment by accredited press persons visiting India to cover certain events, broadcasting equipments, sports items, testing equipment, under ATA carnet system. These goods are to be re-exported after the specified use is over.

(IV) Other changes for simplification and harmonisation or clarification of issues

i. To clarify that inter-state movement of goods like rigs, tools, spares and goods on wheel like cranes, not being in the course of furtherance of supply of such goods, does not constitute a supply. This clarification gives major compliance relief to industry as there are frequent inter-state movement of such kind in the course of providing services to customers or for the purposes of getting such goods repaired or refurbished or for any self-use. Service provided using such goods would in any case attract applicable tax.

ii. To prescribe that GST on supply of raw cotton by agriculturist will be liable to be paid by the recipient of such supply under reverse charge.

iii. Supply of e-waste attracts 5% GST rate. Concerned notification to be amended to make it amply clear that this rate applies only to e-waste discarded as waste by the consumer or bulk consumer.

(V) Changes relating to GST rates on certain services

(A) Exemptions / Changes in GST Rates / ITC Eligibility Criteria

i. All stand-alone restaurants irrespective of air conditioned or otherwise, will attract 5% without ITC. Food parcels (or takeaways) will also attract 5% GST without ITC.

ii. Restaurants in hotel premises having room tariff of less than Rs 7500 per unit per day will attract GST of 5% without ITC.

iii. Restaurants in hotel premises having room tariff of Rs 7500 and above per unit per day (even for a single room) will attract GST of 18% with full ITC.

iv. Outdoor catering will continue to be at 18% with full ITC.

v. GST on services by way of admission to “protected monuments” to be exempted.

vi. GST rate on job work services in relation to manufacture of those handicraft goods in respect of which the casual taxable person has been exempted from obtaining registration, to be reduced to 5% with full input tax credit.

(B) Rationalization of certain exemption entries

i. The existing exemption entries with respect to services provided by Fair Price Shops to the Central Government, State Governments or Union Territories by way of sale of food grains, kerosene, sugar, edible oil, etc. under Public Distribution

System (PDS) against consideration in the form of commission or margin, is being rationalized so as to remove ambiguity regarding list of items and the category of recipients to whom the exemption is available.

ii. In order to maintain consistency, entry at item (vi) of Sr. No.3 of notification No. 11/2017-CT(R) will be aligned with the entries at items (ii), (iii), (iv) and (v) of Sl.No.3. [The word “services” in entry (vi) will be replaced with “Composite supply of Works contract as defined in clause 119 of Section 2 of CGST Act, 2017”].

iii. In order to obviate dispute and litigation, it is proposed that irrespective of whether permanent transfer of Intellectual Property is a supply of goods or service.-

(i) permanent transfer of Intellectual Property other than Information Technology software attracts GST at the rate of 12%; and

(ii) permanent transfer of Intellectual Property in respect of Information Technology software attracts GST at the rate of 18%.

(C) Clarifications

i. It is being clarified that credit of GST paid on aircraft engines, parts & accessories will be available for discharging GST on inter-state supply of such aircraft engines, parts & accessories by way of inter-state stock transfers between distinct persons as specified in section 25 of the CGST Act.

ii. A Circular will be issued clarifying that processed products such as tea (i.e. black tea, white tea etc.), processed coffee beans or powder, pulses (de-husked or split), jaggery, processed spices, processed dry fruits & cashew nuts etc. fall outside the definition of agricultural produce given in notification No. 11/2017-CT(R) and 12/2017-CT(R) and therefore the exemption from GST is not available to their loading, packing, warehousing etc.

iii. A suitable clarification will be issued that (i) services provided to the Central Government, State Government, Union territory under any insurance scheme for which total premium is paid by the Central Government, State Government, Union territory are exempt from GST under Sl. No. 40 of notification No. 12/2017-Central Tax (Rate); (ii) services provided by State Government by way of general insurance (managed by government) to employees of the State government/ Police personnel, employees of Electricity Department or students are exempt vide entry 6 of notification No. 12/2017-CT(R) which exempts Services by Central Government, State Government, Union territory or local authority to individuals.

3. It is proposed to issue notifications [giving effect to these recommendations of the Council] on 14th/15th November, 2017, to be effective from 00hrs on 15th of November, 2017.

Source: PIB, 10th November 2017



PUBLIC CONTRACTS AND TAXES

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There was a news item in the "Times of India" dt 19-8-17 (Chennai Edition) that railway contracts worth 1 lakh crore have slowed down or stopped since July'17 as the contractors are at loggerheads with railways over GST in respect of contracts awarded prior to 01-07-2017. It has been also reported that, as per the contention of the Indian Railway Infrastructure Association "If contractors incur any additional cost in execution of works or in relation to performance of their obligation under the relevant agreement, they have to be compensated on introduction of new taxes as a principle of equity and justice"

Pursuant to implementation of GST wef 01-07-2017, GST on works contract was 18% and has been brought down to 12% for Govt contracts. Perusal of some of the railway works contracts show that they are item rate contracts consisting numerous items and the contract rates seem to be all inclusive. Further as per special conditions of the contract

"income tax and all other taxes, duties, royalties, seigniorages etc. payable to Government/Commercial agencies as per laws of land shall be payable by the Contractor and are deemed to have been included in the rates quoted by the Tenderer/contractor unless specifically provided for otherwise in specific items of the conditions of contract."

Because of the above provisions the officers concerned may be finding it difficult to issue amendment incorporating the GST.

It is not known as to why break up of taxes duties have not been indicated separately. Further the contract is silent in respect of variation in taxes nor there is any explicit provision in respect of "subsequent enactment"

In the pre-GST era, in composite works contracts (LSTK/EPC), 60% of value used to be considered towards materials and 40% towards service part for the purpose of taxes. In respect of LSTK/EPC contracts, organizations like ONGC used to seek lumpsum price for the entire works. Further break up of indicative price of various major packages or items are sought showing the material part and service part. Details of duties and taxes (rate, amount etc) included in the lumpsum price are also sought so that taxes and duties paid by the contractor limited to the amount indicated can be reimbursed. Further seeking such details will facilitate to effect the variation in duties and taxes smoothly without delays.

Following clause also used to be incorporated in the GCC of LSTK/EPC contracts of ONGC under the heading "Change of law" to take care of variations in taxes and duties and subsequent enactment.

1 In the event of introduction of any new legislation or any change or amendment or enforcement of any Act or Law, rules or regulations of Government of India or State Government(s) or Public Body which becomes effective after the tender closing date for this CONTRACT and which results in increase in rate of taxes and duties on the WORKS under the CONTRACT (other than personnel and Corporate taxes), the CONTRACTOR shall be indemnified for any such increased taxes and duties by the CORPORATION subject to the production of documentary proof to the satisfaction of the CORPORATION to the

extent which directly is attributable to such introduction of new legislation or change or amendment as mentioned above and adjudication by the competent authority & the courts wherever levy of such taxes / duties are disputed by CORPORATION.

2 Similarly, in the event of introduction of new legislation or any change or amendment or enforcement of any Act or Law, rules or regulations of Government of India or State Government(s) or Public Body which becomes effective after the tender closing date for this CONTRACT and which results in any decrease in the rate of taxes and duties on the WORKS, (other than personnel and Corporate taxes), the CONTRACTOR shall pass on the benefits of such reduced cost, taxes or duties to the CORPORATION, to the extent which is directly attributable to such introduction of new legislation or change or amendment as mentioned above.

3 All taxes & duties (except where otherwise expressly provided in the Contract) as may be levied / imposed in consequences of execution of the WORKS or in relation thereto or in connection therewith as per the Acts, Laws, Rules, Regulations in force on the tender closing date, for the this CONTRACT shall be to CONTRACTOR's account. Any increase / decrease in the rate of such duties, taxes after the tender closing date, but within the contractual completion date as stipulated in the CONTRACT will be to the account of CORPORATION.

4 Any increase in the rate of taxes & duties after the contractual completion date during the extended period will be to the contractor's account, where delay in completion period is attributable to the CONTRACTOR. However, any decrease in the rate of taxes and duties after the contractual completion date will be to CORPORATION's account.

5 The Contract Price and other prices given in the Schedule of Prices are based on the applicable tariff as indicated by the CONTRACTOR in the Schedule of Prices. In case this information subsequently proves to be wrong, incorrect or misleading, CORPORATION will have no liability to reimburse/pay to the CONTRACTOR the excess duties, taxes, fees, if any finally levied / imposed by the concerned authorities. However, in such an event, CORPORATION will have the right to recover the difference in case the rate of duty/tax finally assessed is on the lower side."

As brought out above railways works contract has been split into various items with rates and quantities. Some of the items are purely for service. There are supply items also. All things put together it form a works contract. Contractor can be expected to assume all taxes and duties as on the date of submission of the offer. Any variation or new levies subsequent to the date of submission should be absorbed by the Customer. Provisions similar to that of organizations like ONGC will facilitate the ground level staff/Officers to smoothly execute work without delays.

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EMERGING GREEN MANUFACTURING IN INDIA - VITAL NEED FOR FUTURE

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Abstract: Emerging India is faced with the challenge of sustaining its rapid economic growth while dealing with the global threat of climate change.

One of the challenges in studying **green manufacturing** is the definition of terms. And one of the toughest terms to define is “**sustainability**”. I consider green as a subset of sustainability (and, thus, green manufacturing as a subset of sustainable manufacturing). The term “sustainable” is heavily used, today.

This offers real challenges to engineers, specially with respect to manufacture and production of goods. If we are not today operating at a “**sustainable level**” then we need to adjust our processes, systems and enterprises to get to that level over time.

Today’s highlighted agenda is to raise **environmentally responsible consumption and production to recover environmental quality, reduce poverty** and bring about **economic growth**, with resultant improvements in **health, working conditions, and sustainability**.

Key words (Climate Change, Environment, Sustainability, Greenhouse, Economic, Natural Resources)

I. GREEN IS SMART BUSINESS - TODAY AND FOR THE FUTURE.

Green Manufacturing is part of a continuous improvement strategy helping manufacturers improve their productivity, profitability and competitiveness. Green seamlessly integrates with Lean Manufacturing practices to optimize processes resulting in improved environmental, worker health and safety and energy performance.

Generating waste costs money. You pay for it three times over - when you Buy it, when you process it and when you dispose of it. Green Manufacturing program will show you how improved environmental performance and increased profitability go hand in hand. Using environmental best practices to eliminate the “**other wastes**” is the next logical step in the Lean transformation.

Green processes: Implementing green processes in operations is the third area. This entails efficient use of key resources, reducing waste generation through lean operations, bringing down the carbon footprint and conserving water.



II. The benefits of Green Manufacturing include:

1. Reduced scrap and rework
2. Reduced hazardous wastes
3. Improved environmental performance
4. Prevention of compliance and liability costs
5. Reduced quantity of raw materials,
6. Resource and energy required to realize your product.

Green Manufacturing experts can help to eliminate waste at its source, meet regulatory requirements and maximize the effective use of your resources. Green Manufacturing Solutions include:

1. Material and resource selection and optimization.
2. Process Improvements
3. Energy Conservation And Management
4. Water Conservation
5. Assessments and audits
6. Regulatory compliance
7. ISO 14001, Environmental Management System (EMS)
8. OHSAS 18001: Occupational Health and Safety Management System

III. The three key areas in green manufacturing:

Green Energy: Involves production and use of cleaner energy. It includes both deploying renewable energy sources like CNG, wind, solar and biomass, and achieving higher energy efficiency in operations.

Green products: ‘Recycled’, ‘low carbon footprint’, ‘organic’ and ‘natural’ are becoming popular buzz words which are associated with Green products. Developing green products can often mean higher costs.

Green as an integral part of the business In a recently conducted BCG survey, executives of nearly all the companies interviewed said that sustainability-related issues have or will soon have a material impact on their business. The survey revealed that 92% of the companies are already engaging in Green Initiatives in some way.

IV. Technologies for Green Manufacturing:

1. Carbon sinks
2. Efficient fuels
3. Consumer Green
4. Green transportation
5. Industry efficiency

V. Green Manufacturing Agenda for India India's Green Challenge India's rapid economic and industrial growth, coupled with urbanization, has come at the high cost of increasing GHG emissions, rising demand for scarce resources like water and increasing waste generation, particularly from urban centres. Today, India is the fifth largest economy and the fifth largest GHG emitter in the world.



VI. Role of Technology in enabling Green :Green technology is the common denominator across all the three areas of green energy, green products and green processes. Companies can set up green energy businesses using technologies such as concentrated solar power or storage technologies like molten salts and ultra capacitors. Another example is building Green waste management businesses using new technologies such as aerobic composting and pyrolysis which can make products like bio-organic fertilizers, organic manure, Refuse Derived Fuel (RDF) economically viable. Indian companies can also consider investments in emerging Green technologies as part of a broader portfolio comprising both, short term and long term plays. For example, the Tata group, as part of their Green portfolio is investing in Sun Catalytix Corporation, an energy storage and renewable fuels company.

VII. Agenda for the Government of India * An equivalent of ISI certification can be implemented as part of a holistic policy framework to govern green products by giving 'Green' ratings based on criteria like product recyclability and biodegradability. * In the area of Green processes, the current focus on one hand has been on improving energy efficiency through energy audits which are basically voluntary and on the other, the recent strictness in the implementation of laws to check industrial pollution. The scope of these efforts can be

widened and integrated into a "Green Audit" which focuses on all three – energy, water, and waste. This can be done through incentivising, through voluntary participation, or by mandating via an independent regulatory body. * Speed up the adoption of many Green technologies by using levers like PPP models (e.g. such a model is proposed for development electric and hybrid transportation), creating a dedicated Green Fund to invest in emerging technologies, setting up Green science parks which promote collaboration between businesses, research institutions and universities and providing fiscal incentives for the early adopters.



VIII. What 'Green' Means and Why it is Important : Green stands for ecological sustainability and encompasses many different concerns including, but not limited to, **air, water and land pollution, energy usage and efficiency, and wastegeneration and recycling.** Green initiatives aim to minimize the impact of human activities on the environment.

IX. Green Manufacturing Agenda for India

A. India's Green Challenge :India's rapid economic and industrial growth, coupled with urbanization, has come at the high cost of increasing GHG emissions, rising demand for scarce resources like water and increasing waste generation, particularly from urban centres. Today, India is the fourth-largest economy and the fifth-largest GHG emitter in the world¹¹. During the 18 year period between 1990 and 2008, India's CO₂ emissions increased more than 150 percent, placing it just behind China.

Rapid urbanization and industrialization generate massive amounts of waste. For example, India generates close to 4 million tonnes of hazardous waste from industrial and biomedical sources. Apart from hazardous industrial waste and effluents which cause water and land pollution, e-waste is also becoming a major area of concern for India. Estimates suggest that only 3 percent of e-waste makes it to authorized recycling facilities, with the rest either going into landfills or being processed at informal recycling yards¹². The Indian e-waste market is expected to nearly double from 450 KT per annum currently to about 800 KT per annum by 2020.

B. Setting the Agenda for Green Manufacturing : To overcome these challenges, or at the very least to minimize their impact, the Indian manufacturing sector will need to take concerted action on all three areas.

Over the past few years, both the Government and the industry have recognized the challenges posed to the country's environment by industrial growth and rapid urbanization. While India has had strict environmental protection laws for many years, the implementation has been weak at times. This scenario is changing if one goes by some of the recent high profile cases, where companies were either denied permissions or given conditional approvals and had to commit to certain sustainability conditions. To supplement the impact of these laws, the Government has launched eight major initiatives as national 'missions' to promote Green, the most prominent of them being the Solar Mission to promote Green energy.

2) Green products: Indian companies and consumers have begun accepting Green products. Companies are offering their customers a growing range of Green products, ranging from organic food products, to electric cars and solar heaters. Lighting and air-conditioning companies are introducing new-age products with energy efficiency as the key differentiating lever. Explicit energy ratings for electric appliances are a new reality and consumers are not only accepting these, but also incorporating them in their buying behaviour. Consumer consciousness about Green products is expected to grow further and companies are quickly identifying this avenue as a route to achieving competitive advantage.



3) Green processes in business operations: Indian manufacturing is catching up with the long term benefits of Green processes to improve corporate brands, reduce costs and achieve compliance at the same time. Energy intensive companies are implementing lean processes to minimize waste and enhance energy efficiency. For example, the shortage of reasonably priced domestic high-grade coal is forcing cement companies to be more innovative in their manufacturing operations. Power consumption in an engineering plant can be reduced by using more power-efficient motors and moving to Compact Fluorescent Lamp (CFL) and natural lighting in the buildings. By adopting these measures, an engineering plant was able to reduce power consumption by nearly 35 percent in a short span of time.

C. Role of Technology in Enabling Green : Green technology is the common denominator across all the three areas of Green energy, Green products and Green processes. Companies can think about the role of these technologies in their business strategy in two different ways – building a new Green Business, and using technology to 'Green' an existing one.

X. Technologies for Green Manufacturing : Today, there is a plethora of new and emerging technologies that aid in both, making the traditional businesses Greener, as well as creating completely new ones. For example, technologies for reducing GHG can be classified into five broad categories:

1) Carbon sinks : This category consists of emergent technologies related to Carbon Capture and Storage (CCS) being developed for use in power plants that are fired by fossil fuels such as coal. These technologies enable capturing and storing CO₂ in ways such that it does not enter the atmosphere. For example, CO₂ from fossil fuels is trapped and stored in underground wells under intense pressure which keeps it in liquefied form.

2) Efficient fuels : This category encompasses a class of technologies that use cleaner fuels for generating power. Examples include biomass, hydro power, Integrated Gas Combined Cycle (IGCC), etc.

3) Consumer Green : This involves using clean and efficient fuels at the user end and solutions covering demand side management. For example, off-grid solar power applications like solar water heating and building insulation are included in this category.



4) Green transportation : Electric vehicles, fuel cells, and bio-diesel are some examples of this category.

5) Industry efficiency : This category refers to the use of Green production methods and technologies in traditional industries such as iron and steel, cement, refining, chemicals, etc. Multiple such technologies are emerging in each of these industries.

XI. Conclusion :

Sustainable development has been part of the alternative development discourse in response to mainstream growth approaches in countries like India.

Moreover, environmental concerns in developing countries have also been raised by ruling regimes. They have raised environmental issues on behalf of the developing world in global forums, voicing legitimate concerns about the unequal power relations in global forums, neglect of development challenges of the developing world and somewhat forced imposition of the developed world's agenda for a green economy on developing nations.

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IIMMite Shine's @. Uniglobe, Pokhra University, Katmandu, Nepal !!!

Sri. Rabi Narayan Padhi, Fellow in research materials management, and IIMM Vizag Branch had lucky enough to Short Listed and called for deliver a session Talk @ Uniglobe, Pokhra University, Katmandu, Nepal under the Theme "***Way Forward Vibrant Role of Supply Chain Manager in Value Chain- For A Sustainable Future***" and it was highly appreciated in the International Management Conference- "Emerging Issues and Challenges in Management: Developing talents, Building organisation and creation future (UIMC-EICM-2017)

From across the world thousands of abstracts/ Research papers had been called for and peer reviewed by Subject World Management Experts on

In addition to that one more good news was that the paper was shortlisted and approved and published in ***Uniglobe Management Review ISBN which is international circulation referred journal.***

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6th-7th March. 2017 (Jointly Organized by (Uniglobe, Global, FIIB-NEPAL)***



THE ROLE OF SUPPLY CHAIN MANAGEMENT IN TODAY'S RETAIL SCENARIO

SHUBHRA SAINI

With the retail market growing vigorously, retailers across the nation are ideating on how to make the best of the opportunities at hand. Supply chain management plays a vital role in the entire process. We talked to the SCM heads of some of the prominent retail chains in the country to discuss how they are beefing up supply chain management efficiencies — the changes that should be implemented, and the improvisations to keep retail on an all-time high.

Importance of Time Definite SCM Service for Retailers

With an all-round boom in the retail sector, the psyche of the consumers is also rapidly evolving. Consumers today, know what they like, go for what they want, and expect impeccable services. This consumer evolution has stirred the retail sector and to keep up with the pace; retailers are coming up with ways to minimise the operational cost as much as they can, without hampering the quality of product, time management and keeping up with the demand forecasting.

Providing the right product at the right time is the need of the hour. Management of the transition of products from manufacturing to the point-of sales is key. Achieving this by itself would ensure the smooth functioning of any retail organisation. From planning of inventory, transition of products and the point of sales, SCM deals with the proper control of it all. A slight shift for the worse to any of the processes in the supply chain could cause dissatisfaction of consumers and lead to major risks in business.

“Availability of stock on shelves is the single largest success factor for a retail business. Timely delivery of products and faster replenishment requires time bound logistic services. Time definite logistic service is critical for any grocery retail business, particular dairy and F&B sectors, but not so critical for apparel retail business,” says Asst Vice President – Supply Chain Management, Aditya Birla Fashion and Retail Ltd – Pantaloons, Mahesh Khetan.

He further adds, “With e-commerce and Omnichannel players competing in the market place, retailers are indeed getting more and more conscious about time definite logistic service.”

Head IT and Supply Chain, Bestseller Retail India Pvt Ltd, Ranjan Sharma says, “We have weekly new launches and the entire supply chain is geared to meet those dates as a lot of planning is involved in it and any misses cost

us heavily.”

It is key for retailers to come up new strategies and re-evaluate with their supply chain and modes of distribution. With SCM in place the retailer is able to monetise on new and upcoming trends with a faster pace and avoid the other risks usually faced.

Resonating the same, General Manager & Head – Logistics, Raymond, Suresh Chugh says, “Retailers are becoming more conscious nowadays because it’s directly linked with secondary sale. More efficient and timely logistics services can help retailers fetch better sell thrust especially for ‘Fresh Sale’, which is already under pressure due to extended EOSS window every season/year.”

Revising the Supply Chain Practices in Omnichannel Era

The consumer today is driving the need for transformation in Omnichannel retail supply chains. The buyers have all the power in today’s market. They are demanding more options and leveraging retailers against each other to get the best value for their money. A competitive retail environment is leading retailers to opt for an Omnichannel strategy. Retailers are working towards seamlessly integrating their distribution channels to improve visibility into inventory and serve their customers in a better way.

Talking about how supply chain mechanics are changing in the digital age, with retailers going Omnichannel way, Vice President – Marketing, SafexpressPvt Ltd, Vineet Kanaujia says, “Development of a profitable Omnichannel supply chain strategy requires analysing the business from top to bottom. We need to look at the retailer’s market strategy, the Omnichannel operating model and execution enablers. Being the supply chain and logistics industry leader, Safexpress has created 30 ultra-modern Logistics Parks, pan-India network covering every square inch of India, and backed the same with world-class systems, processes, human resources, fleet and IT infrastructure.”

The mechanics of logistics is constantly evolving and today as the world is more connected than ever, there is a need for real time integration across channels. Resonating the same fact, CEO and Whole Time Director, TCExpress, P. C. Sharma says, “AtTCExpress we are constantly tracking the movement of goods on a real time basis and we also look at online response management (ORM) as a critical mechanism to address the consumer through the social network. We have

uniformly deployed content across platforms such as our website, catalogues, brochures, Facebook page, Twitter and LinkedIn, to ensure common messaging. We also follow package scanning through barcode technology such as HPT (Hand Pallet Truck), Pallets and Forklifts. This provides accuracy in the operations and real-time tracking of the shipments at packet level.”

The path to purchase is becoming more complex amidst the ever-burgeoning growth of online and mobile shopping. According to Zebra’s 2017 Retail Vision Study (RVS), superior Omnichannel support requires 90 per cent inventory accuracy. As a result, inventory accuracy is more critical than ever as products from both brick-and-mortar and digital channels flow through the pipeline.

Talking on the same, Regional Sales Director – India, Zebra Technologies, Deep Agarwal says, “Omnichannel retailing has become a necessity more than a requirement as consumers today are digitally empowered. Consumers can virtually tap into every retailer’s stockroom from their mobile device to search for products and compare prices. To meet this demand, retailers are adopting technology solutions to heighten merchandise visibility throughout the supply chain, from the time inventory is shipped from the warehouse and received in a store’s back room to when it’s stocked and replenished on the sales floor.

Agarwal, adds, “The rise of online shopping has trained consumers to demand unprecedented convenience. Retailers today, must be nimble enough to serve their multi-channel shopping journeys seamlessly. Around the globe, retailers are investing in IoT technologies to redefine their operations and the shopper experience. Merchants are reinventing their supply chains with upgrades that enable automated, real-time inventory visibility via Internet of Things (IoT), such as RFID, which can boost inventory accuracy levels to as high as 95 per cent.”

Talking from an e-commerce perspective, CEO, Vinculum, Venkat Nott says, “Customers today do not like to wait for the products they buy. However most of them do not like to pay more for express service. A paid service for fast shipments is likely to work well for retailers. Marketplaces have set the standard already and have invested in products not just to streamline their order management processes and to have real time inventory in stores and warehouses but also predictive analytics in terms of what products to carry in which store and keeping the right products in warehouses close to the buyer.”

Further talking about Vinculum services, he says, “Vinculum has cutting edge products to facilitate Omnichannel retailing and provides real time view of inventory across the supply chain using our VineRetail suite of products.”

Retailer’s Perspective on Omnichannel

Retail is going omnichannel and meeting the supply chain needs of this new environment is a major challenge. Talking on this aspect, Chugh says, “Yes, it’s true that retail is going Omnichannel and meeting the needs of this new environment is a big challenge. Since this is the need of the hour and must be implemented to get the better sales. We are also working on this but at very initial stage as of now.”

Khetan, says, “If you cannot beat them, join them! Omnichannel is the future and no retail organisation can stay away from entering into it. We have started selling online through prominent e-commerce players like Amazon, Flipkart etc, in addition to creating our own Omnichannel platform.”

“We are going through a lot of technology intervention which includes bringing together different portals and market places to converge to one system at store for execution with realtime integration of inventory and logistics. We have already gone live across all our stores for Tata Cliq since October 1, 2016 and will be live on our brand websites by the end of June,” says, Sharma, from Bestseller.

Forecasting Techniques and Methodologies

Traditionally, retailers have not been able to predict the demand, leading to a mismatch between demand and supply, thereby affecting profitability. Even though forecasting techniques and methodology have continued to develop in sophistication, they cannot deliver the accuracy required for managing logistics in the context of the retail scenario. The answer to these problems lies not in better forecasts, but in reducing the dependency on forecast and by harnessing the potential of modern logistics services.

Talking on the same, Sharma from Bestseller, says, “We are fast fashion brands and we have to spot trend way ahead of time. Then we get into sampling and manufacturing cycle which is also very long. Though modern logistic services definitely help to reduce the overall time to make the merchandise available but the same cannot replace the art of demand forecasting. But at the same time if the entire sourcing strategy and manufacturing is aligned well then smaller sample sets could be developed and on their success large scale manufacturing could be done thus reducing the risk.”

Chugh of Raymond, opines, “Answer to these supply chain related problem lies not in better forecasts, but in reducing the dependency on forecast and by harnessing the potential of modern logistics services. Combination of both i.e., better forecast as well as usage of modern logistics services will give much better results. None of these two components alone can generate better yield or desired results.”

“Best demand forecast accuracy is considered to be at 50-60 per cent. So, supply chain has to mitigate the risks associated with about half of the inaccurate demand forecast in any industry, which results in high or low

safety stock, stock outs and loss of sale. Quick turnaround of unsold or obsolete stock and faster replenishment of high selling stock from manufacturing location to point of sale is the key to success of retail business which is achievable through harnessing the potential of modern logistics services,” states Khetan of ABRL.

Innovations that Inextricably Links SCM and Retail

India has occupied a remarkable position in global retail rankings. The Indian retail industry is one of the fastest growing in the world. India’s retail sector is experiencing exponential growth, with retail development taking place not just in major cities and metros, but also in Tier-II and Tier-III cities.

Talking about the innovations that is happening in the space of supply chain management, Kanaujia, says, “Emerging trends like making the supply chains digital, increasing the role of procurement in supply chain, increasing collaboration for efficient supply chain management, etc., will be the major factors driving growth in the organised retail market in India. Being the industry leader, our role is very vital in bringing about the global standards to India. We are proactively working towards hastening this change in our industry and taking it to a different level.”

Future Supply Chain Solutions Limited, has recently inaugurated a High Speed Cross Belt Sortation Technology, at its distribution centre at Mihan, Nagpur.

This new technology, being first of its kind in India, is touted to be a game changer and a stepping stone, making it India’s most automated first-of-its-kind.

Talking about this new innovative SCM facility, Group CEO, Future Group, Kishore Biyani says, “This distribution center will be a milestone in the Indian warehousing sector. With the brilliant technology used in the Sorting system at the DC along with the individually coordinated system solutions, we can ensure the highest level of service to the consumers of the nation.”

The elevated technological quotient in the sector and India is already witnessing the importance of big data and IoT in the logistics sector. Even while technology is evolving, we do not see a divide but co-existence of manpower with technology to move ahead to the next level.

Putting things in perspective, Sharma of TCExpress, says, “Some of the trends and practices which are already in play in the global markets includes robotics, automation and unmanned aerial vehicles/drones. We use piece level scanning through RFID/ barcode technology. It is noticeable that this technology is widely used by manufacturers and retailers in modern trade segment. We being future-ready have technologically adapted to this need and are in sync with Industry demand.”

Talking about some of the SCM best practices adoption, Khetan, says, “There had been quite a few best SCM

practices adopted by us, key ones being: use of warehouse management system (WMS) coupled with RFID technology turning our warehouses into paperless operation, Auto replenishment system (ARS), ensuring faster replenishment of stock to the stores and Vendor portal for auto approvals of shipment requests from vendor.”

Divulging the details of SCM innovative practices that has helped Raymond in staying ahead in the game, Chugh, says, “Layout restructuring, current season stock kept on ground floor and previous season stock moved to first and second floors based on the ageing. This helped us in increasing picking productivity; man power deployment based on season/ month wise load helped us in cost reduction of WH transactions/piece; working on Auto LSP selection program which help us in significant reduction of the logistics cost/ piece; manual processes converted to system based programs which helped in hassle and error free work.”

Customer Care Associate & Head-Supply Chain and Mission Control, Shoppers Stop Ltd, Devadas Nair says, “Supply chain in Shoppers Stop coordinate and integrate all activities associated with moving products, services and information into a seamless process by embracing all partners in the chain including various departments, vendors, carriers and other service providers.”

Further talking about the innovative SCM practices, which they have adopted, he says, “Regionalised distribution centre operation, which helps us to manage the inventory better; distribution centre management is outsourced and independently handled by logistic partners; implemented advance warehouse management system with Omnichannel capabilities; same-day turnaround across DCs. Some of the fast moving products are delivered directly to the stores to ensure faster availability; sales and stocks information are provided to vendors on a daily basis so that they can be proactive.”

Keeping Business Seamless Even During Peak Seasons

Managing fluctuations in demand during peak and seasonal requirements is a must for every retailer. Talking about the same, Khetan, says, “There is a separate forecast for peak and seasonal requirement which is aligned with capacities at each node of supply chain, right from transporters’ hubs to warehouse capacities for transaction as well as storage.”

“We start building up stock at the DC and retail points well in advance so as to reduce the spike in demand. We also cross train people to handle loads during peak seasons in multiple shifts,” says, Sharma from Bestseller.

Lot of automation devices/ equipment are being used in International SCM industry which reduces the dependency on labour. It helps on improving the productivity as well as reduction of manual errors. Talking in the same context, Chugh, says, “We plan the manpower in such a way that during non-peak months/

seasons, we reduce the unskilled labour but we don't touch the skilled labour. We cover up the additional workloads by doing over time by extending working hours on normal days and working on Sunday, as and when required."

Role of GST in Improving Logistics/ SCM Conditions in India

The proposed model of GST brings to the Indian economy the promise of becoming more competitive in a global market, with a better tax environment to conduct business in India. The new tax regime will result in a seamless integration of goods and services transactions across the states and will have a positive impact across the retail value chain.

According to JLL India, the Goods and Services Tax (GST) and Real Estate Investment Trusts (REITs) are soon going to be a reality in India. These, coupled with a growing demand for quality warehouses by the industry, are expected to lead to an increase of Grade-A and Grade-B warehousing stock across the country in the next few years.

According to CEO & Country Head, JLL India, Ramesh Nair, "In terms of y-o-y increase, the Grade-A stock in 2016 rose by 27 per cent compared to the more modest 11 per cent increase in Grade-B stock. The corresponding figures for 2017 are expected to be 29 per cent and 14 per cent, respectively. This not only shows a growing stock of organised warehouses in the country but also a growing preference for Grade-A warehousing space."

City-Wise Impact (Source JLL India)

- Delhi-NCR had the maximum warehousing stock in 2016 (29.3 mnsft), followed by
- Mumbai Metropolitan Region (20.5 mnsft)
- Bangalore (17.5 mnsft)
- Pune (12.8 mnsft) and
- Chennai (10.4 mnsft)

Cities like Kolkata, Hyderabad and Ahmedabad all have smaller stocks of warehousing space. Except for Pune and Chennai, all other cities have a bigger Grade-B warehousing stock than Grade-A.

Moreover, the difference between these two stocks is glaring in Delhi-NCR and Mumbai. In terms of highest Grade-A and Grade-B warehouse rentals, Pune and Chennai lead the way due to proximity to manufacturing hubs and local market dynamics. These two cities are followed by the bigger metros of Mumbai and Delhi-NCR. Other cities such as Bangalore, Ahmedabad, Kolkata and Hyderabad have lower rentals for both Grade-A and Grade-B warehouses.

The warehousing, manufacturing and logistics industries will benefit the most from the implementation of GST in India and the new tax regime will also usher in an era of upgradation in the warehousing infrastructure. While the existing eight cities (mentioned above) are expected to retain their leading positions after GST rollout, India

will also witness the emergence of at least 12 new feeder/ warehousing spoke locations.

Talking about the impact of GST on the logistics and SCM sector, Kanujia, says, "With the GST being implemented, a common market for all goods and services will be created. The removal of several state level taxes will result in an absolutely unambiguous taxation system and reduce the overall cost of handling goods and services. The procurement of raw materials would become less complicated, which will create opportunities for more suppliers and vendors. Due to this, a wider base of distributors would be available as interstate movement paperwork will not be a hurdle, resulting in better access and low transportation costs. Supply chain efficiencies are expected to improve with standardization of tax structures across states. This is expected to have a positive impact on retailers. GST will result in reduction of the overall tax burden on products and services, leading to a boost in demand. Warehousing decisions will no longer be dictated by the comparative tax advantages of various states, thereby enabling retail firms to make business decisions based on supply chain dynamics. This would result in economies of scale and improved efficiency."

From the operations point of view, it will allow for seamless flow of goods and services across states. With the implementation of GST, multiple check posts and entry points may be removed or reduced leading to increase in efficiency and time definite delivery.

"Definitely, the implementation of GST on retail sector has a positive impact from both taxation and overall operations. From taxation point of view, it would bring down the overall indirect taxes which is 30 per cent according to present tax structure. This includes a range of taxes such as excise duty, VAT, CST, tax on warehousing, rent, octroi and entry tax," says, Sharma from TCIEExpress.

Echoing the similar sentiments on how GST will up the retail value chain, Khetan says, "Absolutely yes! Apart from warehouse consolidation, there are many other positive impacts of GST like: reduction of time at check posts due to road permits and way bills; lesser documentation resulting in reduction in lead times; feasibility of implementation of automation due to large central warehouses, thereby improving productivity.

Giving a critical stand on GST Sharma from Bestseller, opined, "To some extent it reduces inefficiencies in the current system but at the same time the current draft will make it complex." In his concluding remark, Chugh resonated Sharma's critical standpoint on GST, saying, "I can't say as of now. It will depend upon the percentage of GST levied on each sector v/s existing tax structure. Some sectors might benefit and some may not. Once the GST is implemented fully, we can review and confirm the final implications."

Source : www.indiaretail.com





GST - IMPACT & STRATEGIES TO LEVERAGE COST BENEFITS THROUGH SUPPLY CHAIN RE-STRUCTURING & RE-ALIGNMENT

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Brief Introduction on GST : Goods and Services Tax (GST) is a **Value Added, Multi-Point, Destination Based, Dual Taxation System**aim to eliminate **Double Taxation / Cascading Effect** of several indirect taxes like VAT, CST, Central Excise Duty, Service Tax etc. It is actually a culmination multiple taxes (17 Taxes & 23 Cesses of earlier tax system) to a **Unified Tax System**. It is fondly described as **One Nation, One Tax & One Market – a major Indirect Tax Reform in India**.

Supply is the basis for taxation with Time, Place and Values are defined to levy and collect tax. Person who's turnover crosses Rs 20 Lakhs (Rs 10 Lakhs in case of Special Category states) need to Register and such person become Taxable Person. GST shall facilitate **Seamless Credit** across the entire supply chain under a common tax base. Periodic filling of Returns and certain **Tax Compliance** procedures are prescribed for all taxable persons. GST **Eco-system** is a wide spread **Network** encompasses central and state governments, taxpayers and other **stakeholders**

It is expected to result into Ease of Doing Business; Simplified Tax Collection System & Expand Tax Base; Total Digitalization; Transparency in Tax System; Improved Efficiency & Productivity in Supply Chain; Resulting in Business Growth; More Efficient Neutralization of Taxes; Bring about a Macroeconomic Dividend.

What is GST ? Understanding Basic Concepts

1. Multiple Taxes to Single Unified Tax System
2. GST is a Value Added Tax - a Multipoint Levy Tax
3. GST is a Destination based Tax
4. GST is Levied concurrently by both Center and State
5. Supply is the basis for Levy & Collection of GST
6. Time, Place, Value of Tax Defined for Proper Levy of Tax
7. Taxable Person – Registration Under GST
8. Seamless Input Tax Credit – Payment Mechanism
9. Compliance - Filling of Returns – Matching Concept
10. GST Eco-System

S.N. Panigrahi

Supply Chain & its' Functions: Sourcing, Procurement, Logistics and Supply Management fall under the supply-chain umbrella. Forecasting, production planning and scheduling, order processing, and customer service all are part of the process as well. Activities such as inbound

and outbound transportation, warehousing, and inventory control are covered in logistics. The management of all these functions refers to Supply Chain Management.

Supply Chain Management (SCM) can be defined as **management of the supply chain as an integrated process of acquisition and management of flow of supply of inputs from point of origin to point of consumption and delivering further value added output to the next level point of consumption** (like from supplier to manufacturer to wholesaler to retailer and to final consumer) by balancing supply and demand with optimal management of resources with the objective of establishing relationships for maximising value for mutual benefits on economically, socially and environmentally sustainable basis.

(As defined by the Author in his Article "Value Insights into Supply Chain" Published in Aug'2010 issue of MMR – IIMM)



Supply Chain creates value of Profitable Growth, Working Capital Reduction, Fixed Capital Efficiency, Tax Minimization, Cost Optimization etc through proper strategic choices of Network Design, Warehousing Locations, Sourcing & Vendor Selection, Efficient Negotiations, Asset Management etc.

GST Relevance to Supply Chain & Business Impact: GST impact can be seen in both inbound and outbound transactions – entire supply chain process, cost of acquisitions, location of facilities, marketing, product pricing, logistics, cash flows, accounting, IT system etc and strategies for these are expected to undergo drastic changes. Areas of Supply Chain to be impacted by GST are Tax Impact, Sourcing / Procurement & Logistic

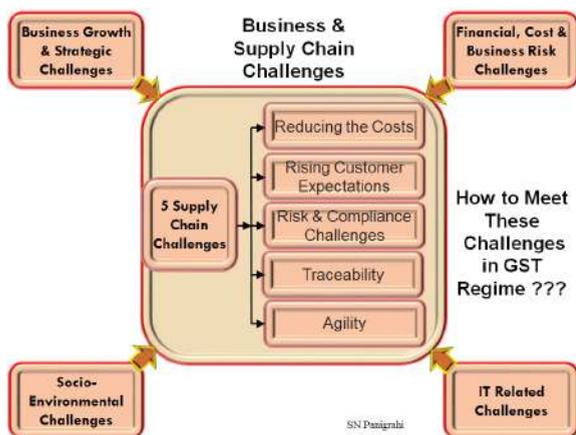
Decisions, Impact on Sales & Distribution, Warehousing Decisions, Manufacturing Facilities & Processes, Impact on Finance, Costs, Budgets & Working Capital, Compliance & Risk Assessment, Change Mgt – Advocacy Assessment, IT Upgradation & Transitional arrangements etc.

GST : Business Impact



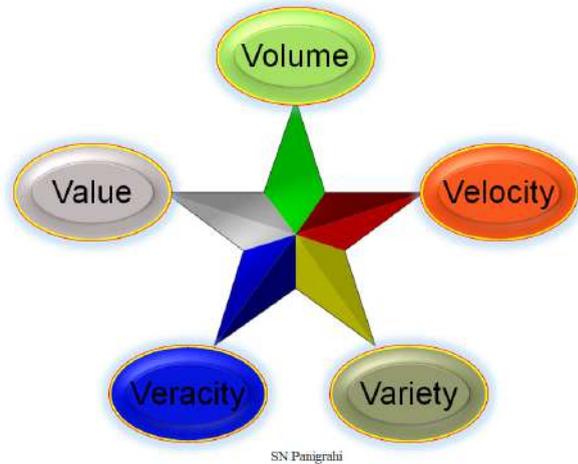
Therefore, companies should revisit supply chain strategies; redesigning supply chain networks; redefining sourcing & procurement strategies; manufacturing & locational strategies; re-look into distribution & warehousing strategies etc. to gain benefits from GST implementation.

Supply Chain Challenges in GST Regime: In every business broadly there are Four Challenges – Business Growth & Strategic Challenges for Development & Sustainability of Business; Finance & Cost related Challenges including Business Risks; Socio-Environmental Challenges & Technology related Challenges. Operating within overall business related challenges, within supply chain there are some challenges like Reducing Costs, Raising Customer Expectations, Supply Risks & Compliance Challenges, Traceability and Agility (Responses).



The above supply chain challenges may in other words be described with 5Vs – Value (Customer Value / Satisfaction, Value Addition to Business, Costs); Volume (Business Volume (Finance), Product / Transaction Volumes, Asset Volumes (Warehousing / Stores)); Velocity (Speed of Delivery, Response time, agility); Variety (Product Variety, Transaction Variety, Customer Variety, Preferential Variety, Varying Capacity); Veracity (Authenticity, Traceability, Transaction Evidence)

5 Vs of Supply Chain



Business & Supply Chain Mapping : This is the first and fundamental step in creating a visibility by juxtaposing current & proposed various aspects of business processes, functions, transactions, capacities etc thereby to find gaps and requirements, value assessments, waste elimination and apply lean principles and develop strategies.

Along with the above reviews also shall be made for contracts review, review of finance & costs, compliances, business risks, IT & other technological assessments. These shall made for pre- GST and post- GST scenarios.



Supply Chain Re-alignment in view of GST : Now industry can leverage the impact of GST. **Post-GST the supply chain can be designed purely on sourcing competitiveness, benefits of economies of scale, operational efficiency, logistic cost and customer service considerations and may not compromise on tax effectiveness because of uniform tax structure in place unlike earlier multiple taxes of different nature and rate at multiple points.** The supply chain strategy in future should look into opportunities to rationalize supply network, redefining sourcing & procurement strategies, redesign manufacturing & locational strategies, re-engineering distribution channels & consolidation of warehousing strategy to derive logistic efficiencies and to reduce levels of inventory holding, strategies to improve service levels required by the customers and achieving responsiveness & speed by taking advantage of uniform tax structure across the country.

Shift to Fewer Facilities: With the implementation of GST, companies would no longer be required to have warehouses in every state just to facilitate stock transfers and avoid indirect taxes (CST @ 2%). **With GST in place, India will become a common market without any difference between interstate or intrastate sales.** GST (CGST & SGST) on intra state transactions shall be equal to IGST levied on interstate transaction irrespective of the nature of supply – either sales or stock transfer, thus eliminating the need to operate multiple warehouses across the country in different states. **The key advantage for companies will be re- engineering of their business operations to leverage efficiencies of scale, locations, warehouses and routes.** GST regime may lead to merging of small and scattered warehouses to one or few larger centralized warehouses clustered in certain parts of the country specifically around consumer centric metropolises.

Leveraging Logistical Efficiency: Large Centralized Warehouses will be able to attain benefits through improved productivity, centralization of resources, congregation of allied and multidimensionality, better space utilization, adoption of technological sophistication by using state-of-the-art planning and warehouse management systems which are not feasible and used in smaller and scattered warehouses. All these results into revised distribution strategies that lead to minimization of the operating cost of multiple warehouses and reduced transport lead to Increase in responsiveness, faster and better services to the customers. Inventory holding costs also expected to come down.

Transfer of Goods within same GSTIN (GST Identification Number – Registration Number) will not be charged to GST. That is company / entity having operations within the same state and comes under same business vertical can operate under one GSTIN and therefore need not pay tax while transferring goods / services from one unit to the other of same GSTIN. However in case of **any transfer of goods or services between units operating in different states or operating under different business**

verticals have to pay GST as they need to take different GSTINs

Leveraging Total Supply Chain Lead Times: With Supply Chain Realignment and re-engineering post-GST, transportation routes may change, vendor location and base may vary, purchasing decisions, lot sizes etc may alter leading requirement of re-calculation of EOQ/ Lead Times, Inventory Holdings etc ultimately resulting in improved supply chain performance.

According to nature of industry, location, supply base, purchasing plans and decisions may change. **Lead times, EOQ levels, inventory holdings may change. Budgets, cash out flows need to be changed based on impact. Contracts and credit terms also need to be changed.** Based on delivery terms (INCOTERMS) the impact of GST on freight forwarding, ocean transport for import shall be worked out.

Leveraging Sourcing / Procurement Decisions: Post GST scenario may enable Competitive Sourcing as Tax Efficient decisions vanish. **Right Vendor Selection** is very essential in the new tax regime considering cost and compliance requirements. **Dealing with non-compliant vendors should be avoided.** The risk of dealing with such vendors is on the buyer as the onus of paying taxes with interest lies with the buyer if the vendor is not made payment of taxes. Vendor performance rating system is available in the proposed GST electronic platform to track vendor compliances in respect of payment of taxes and filling of returns.

In the GST regime small businesses and vendors have to compete with large business houses as tax based advantage or differentiation will go off. Area based tax exemptions may not continue for long. Tax incentives / exemptions by state or central government also may not sustain. That is vendor specific or location specific tax advantages may not exist. In view of the above vendor selection criteria also may change.

Pricing and promotional strategies may change under GST regime. Supply chain and manufacturing strategic alterations may offer to trade-off between customer serviceability and cost associated. **With uniform taxation, marketing forecast process may improve. Pricing need to rework based on costs associated with manufacturing, supply chain and new tax structure.** Discount strategies may go off as any discounts extended post sales transaction also being captured and adjusted for GST.

Even the existing contracts may be reopened and prices renegotiated. New collaborative associations may be forged taking advantage of re-arrangement of warehousing and supply network. However cost estimation and cost structuring need to be done to gain an advantage of post GST regime. Since the GST impact can't be generalized with specific activity / function wise transaction mapping and proper sensitivity analysis may be made with various permutations with a range to understand roughly the impact of GST.

Re-Design Business Models: GST Complimented business blue print shall be prepared considering seamless integration, sales and distribution network, business risk assessment, shareholder profit maximization. This is over all company level broad exercise to leverage benefits of post GST advantage.

Profound Impact on Cash Flow and Working Capital: Though it can't be generalised, the GST will impact all types businesses especially in respect of cash flow and working capital requirements. Even though seamless input credit is available in the entire value chain, some sectors are impacted positively and others negatively and accordingly they need to **re-evaluate their working capital requirements and make budgets.**

Leverage Technology -IT Enabled GST Transformation: GST is the single biggest driver for the adoption of technology in the tax space in India. Tax automation will lead the way for corporations to be compliant with the dynamic nature of the new tax regime and derive maximum benefit from it.

With implementation of GST, organizations face newer challenges such as alignment of accounting and taxation systems with the new processes, they will need to embrace IT into the entire workflow. GST can provide a major fillip and competitive advantage through creation of transparent and totally digitalized business environment as technology is at the heart of GST. Businesses need to have a reasonable IT infrastructure in place in terms of business process reinforcement, tax configuration, input credit setoff, tax impact assessment & accounting, inventory data storage, document numbering, data amendments, impact analysis on interfaces, reversal of open transactions, many other dynamic changes and so on to align with GST. The proposed e-way bill for moving goods within the country and employing RFID chips and QR codes for containerized cargo movement for exports would rely heavily on high technology interface.



Though initial hiccups, hitches and hardships are being experiencing, these will be addressed through improvements and course corrections with consensus looking at long term benefit to industry, business, common man and to the nation at large and we may expect GST may bring real transformation to the country.



CUSTOM EXCHANGE RATES

(All rates per unit) w.e.f. 23rd November, 2017

CURRENCY	IMPORT	EXPORT
Australian Dollar	50.65	48.70
Bahraini Dinar	179.15	167.45
Canadian Dollar	52.00	50.40
Chinese Yuan	10.00	9.70
Danish Kroner	10.55	10.15
Euro	78.25	75.65
Hong Kong Dollar	8.50	8.25
Kuwait Dinar	223.50	209.20
Newzealand Dollar	45.65	44.00
Norwegian Kroner	8.05	7.80
Pound Sterling	87.50	84.65
Qatari Riyal	18.45	17.45
South Arabian Riyal	18.00	16.85
Singapore Dollar	48.95	47.45
South African Rand	4.70	4.40
Swedish Kroner	7.90	7.60
Swiss Franc	67.20	65.00
UAE Dirham	18.40	17.20
US Dollar	66.20	64.50
Japanese Yen	58.85	56.85
Kenya Shilling	65.20	60.90

Source : www.dailyshippingtimes.com/custom-exchange-rates.php

Supply Chain Re-alignment in View of GST



Supply Chain Operational Efficiency – Leveraging GST Complimented Cost Advantage : As discussed above Post-GST possible cost and other strategic, operational and transactional benefits let us summarize these as Improved Lead Times, Reduced Asset Holdings, Consolidation of Facilities, Rationalization of Vendor Base, Shift to Revamped Distribution Channel, Scale Driven Warehousing & Logistics etc.

LEAN WAREHOUSE MANAGEMENT OPERATION IN SUPPLY CHAIN:

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The implementation of warehouse management system is to manage the goods movement, and if any stock changes are in the warehouse, at Storage, Bin levels. If you implement Lean Warehouse management, inventory management level takes place mainly at storage location level.

Lean Warehouse Operations: Warehouse has the most core responsibility, to store goods, materials, and components required for distribution, they should be free from dust, and also follow easy methods for operation of a good warehouse, and it is the responsibility of any warehouse operation, to get evolved in delivering high level inventory management which entails swift receiving of materials, and shipping accurately, and finding means for flexible packing of materials and services, including after-sales-services as a state of art, storing of materials, in safe custody in meeting the requirements of supply chain.

The best practices of Warehouse operations enable companies to meet the strategic delivery needs by improving material flow order, picking, replenishment, of stock items, operations and maintenance of swift operations, flow of materials in the right way to the right place, and at the right time, as they are expected by the next link in the supply chain which includes to the final consumer.

As development of an increasingly integrated global market with more production facilities, scattered around the globe, warehouse operations are becoming the key factor to cope with demand, and inventory management, is becoming a more critical component to the company's financial performances. Warehouse has become a vital importance within, supply chain, because it holds so much potential for bringing in improvement in lead time and cost functions.

The biggest challenge in warehouse operations is the increase in productivity, accuracy, reduction in cost, and mostly in inventory levels, while improving customer satisfaction, and ultimately means of optimized goods storage, with less capital formation, and the efficient use of limited resources which has been allotted in major of warehouse operations.

The Integrated supply chain environment, where often warehousing is considered as non-value adding activity, applying Lean can ensure a sight of visibility for the company of the value added to the activities which are

carried out at the warehouse in order to gain competitive edge.

1. Delivering low cost and on-time service to distribution centre's production facilities to the point of consumption through improved efficiency and productivity, while reducing cost, improving quality, and the accuracy in preparation of orders.
2. Improving stock control facilities to prevent disruption in production or service due to lack of material, picking, disruption due to replenishment of materials, loss of sales and unnecessary purchase.
3. Managing the constantly the increasing complexity of the market, by improving flexibility, and showing high change – and to adapt to meet the customers fluctuating demand due to functional changes.

Waste in warehouse process, means unnecessary means or wasteful materials, expenditure, and has great potential, and thus it can be prevented by using Lean management.

Stock: When it is identified and minimized, since warehouse picking, activities, generate more cost, than required. Lean principle, kaizen methods, and re-engineering approaches can be applied at every step to warehouse operations. The right lean product solutions can reduce lean time and reduce working capital.

Wasteful potentials identified in Warehouse Management: 1. Transportation: Internal transportation that results in costs and lower productivity. 2. Inventory: Excess stock, material placed in different location, due to poor visibility in warehouse, difficult in locating, inaccurate information on existing inventory will bring impact on orders, and ultimately unable to execute orders, and distribute the materials as required. 3. Movement: of materials not required, people not required, which lead to dislocation of warehouse operations. 4. Defects: Activities such as re-work, returns, adjustment of materials, require manual operations, and delayed customer requirement, inventory discrepancies, material missing, tracking, damage, defective, wrong delivery. Space: The use of space is less optimal, excess material of different types or sizes of unwanted containers which occupy a lot of space which is not required in the warehouse, which leads to dislocation in supply

chain activities.

Solutions: implementing lean warehouse operations can have a great impact on total supply chain

1. Handling time, reduction in picking of materials, palletizing.
2. Reduction in movement of trucks loading or unloading activities.
3. Reduction in time spending on inventory handling, adopting perpetual inventory system for efficient management of warehouse in supply chain.
4. Reduction in material movement in trucks, loading and unloading activities to be curtailed.
5. Customer specification strictly to follow as there will not waste of time in distribution of materials.

While eliminating any kind of confusion while loading client's range of products, it should also be noted that they are stored in an orderly way or manner, the warehouse services are properly maintained, storage facilities are properly ventilated, they are termite free, and a timely check is maintained for detection of foreign materials. Drive between racks allow lift truck to enter the rack from one side to pick up or pull out materials in pallets from the correct side of the warehouse. This is done because pallets can slide backwards on a continuous rail. Forklifts are used to drive in between the racks ready to access to pallets and materials. Warehouse will receive benefits by implementing Lean management, in the supply chain management system. Warehouse will be able to meet the changing needs or requirement of their customers by improving their efficiency, thus reducing errors, maximizing space, available for supplies and fulfilling supplies based on customer's requirement.

1. Reducing labor cost, related to any re-work, and inefficient handling of materials. 2. Reducing order, processing time by standardizing work flow, and limiting work on progress. 3. Reducing unnecessary transport for supplies for storing materials based on how quickly they require the materials. 4. Reducing unnecessary inventory of supplies by storing materials based on how quickly the requirement of materials in supply chain. 5. Reducing slow periods by pulling supplies based on customer needs.

While warehouse face many difficult challenges on lean manufacturing tools and to overcome them are:
Value stream mapping: This is a process which enables warehouses and their manager's to understand how things currently work. Workflow is usually mapped out and their relationship among the various process are clearly identified to
1. Understand how the varying process interact. 2. Just to see scheduling and department work flow affect their operations. 3 Identify potential

incidents in the process, by creating a visual, and by identifying the materials used in warehouse is stored inefficiently, which are handled too often. This can improve the warehouse operations; layout and storage facilities bring a lean management in to the system of supply chain, thus reduce handling, improvement in items storage. Example: fast moving items should be easy assessable to reach, while slow moving items can be placed at a location not necessary for immediate use, or on top of the rack of the warehouse in supply chain.

5S is a lean manufacturing concept tool that improves the lean warehouse efficiency by systematically organizing and cleaning the work place, as well as standardizing the work place.

1. Sort: this involves removing not required items like tools and equipment, from the warehouse place, which can maximize usable space in the area of work. 2. Set-in-order: require each issue of work, area arranged for convenience and efficiency. The area of work should be well organized clean, and in a manner it will improve the workers productivity, making it easier to work better and thus reduce move in warehouse like reaching, bending, and stretching in a ware house lean management function in supply chain. 3. Shine: This requires employees clean in their work area, after the work is completed; as this is designed to help the employees to gain potential steps in removing debris in the premises. 4. Standardize: This pertains to documents are brought to order and successful improvements so that they can be more easily applied in the Lean systems of warehouse work areas. 5. Sustain: requires each step to be repeated on a daily basis. This will ensure warehouse to improve work practices on a daily basis in a Lean Management in supply chain.

Visual communication: is a very important element for any Lean warehouse management system, since identification systems like codification labels, signs of storage system, which provide essential information, where tools, materials, equipments are placed.

Kanban is a pull system, it pulls supplies to the warehouse floor, based on customers required or order, as well the work that has been completed. Kanban uses visual cards to control the workflow with a warehouse in a supply chain. In a warehouse Lean Management system create an orderly and consistent flow of materials from picking, processing, packing, and then to shipping of materials in a timely manner. Since supply department receives a Kanban card giving signals that picking materials needs more supplies. Kanban pull system helps reduce errors in processing because it limits work-in-progress in a Lean Management of supply chain.





WTO UPDATE :

AZEVÊDO CALLS FOR GREATER INCLUSIVITY TO MAXIMIZE THE BENEFITS OF ECONOMIC PROGRESS

– DG Azevêdo



Addressing a High-level Seminar on the Global Deal and Trade at the WTO on 22 November, WTO Director-General Roberto Azevêdo said that fostering greater inclusivity in global trade is one of the most pressing challenges of our age and a prerequisite to ensure everyone benefits from economic progress. DG Azevêdo hosted the event, dedicated to the theme “Making Globalization Work for Everyone”, together with the Prime Minister of Sweden, Stefan Löfven.

Azevêdo calls for greater inclusivity to maximize the benefits of economic progress

“While globalization has brought progress overall, we need to recognize that not all have been able to participate and benefit. Many people feel disconnected from economic progress. We need to respond to this situation. This means using all tools available to promote growth, development, job creation and inclusivity,” said DG Azevêdo. “Fostering this greater inclusivity is undoubtedly one of the most pressing challenges of our age. The solutions are not always evident. But we cannot shy away from this discussion and we cannot make believe it does not exist,” he added.

DG Azevêdo stressed the key role the WTO plays as “a forum for governments to meet, talk, and negotiate and a platform to discuss how to maximize the benefits of economic change and minimize any adverse consequences”. This will be brought into focus at the WTO Ministerial Conference in Buenos Aires (10-13 December), where a range of issues will be discussed by members, including the theme of inclusivity and ensuring that more people can benefit from trade. “Many members are talking about ways to help more small and medium-sized enterprises to trade, or how to leverage the potential of e-commerce to ensure more people can join global trade flows. Those conversations are ongoing. The Buenos Aires meeting will be an important opportunity to advance these debates – and ensure that everyone can benefit from the opportunities that the global economy has to offer,” DG Azevêdo said.

The Global Deal - a global partnership with the objective of jointly addressing the challenges in the global labour market and enabling all people to benefit from globalization – builds on the ongoing WTO “Trade Dialogues”. This initiative is about broadening the conversation and hearing from new voices as well as ensuring that stakeholders can highlight issues that are important to them, thereby broadening and enriching debates at the WTO. DG Azevêdo highlighted the importance of domestic policies and the ability of economies to adjust to changes. This includes “more active labour market policies, education policies and the provision of support for workers” and “more comprehensive, flexible and forward-looking policies and investments in education, from the primary to the post-secondary levels, critical to equip individuals to take advantage of the new opportunities offered by technology and trade,” he said.

“In addition, experience suggests that success in facilitating adjustment involves finding an appropriate balance between labour market flexibility, on the one hand, and proper employment standards, on the other. There is a balance to find here and it is not an easy one,” DG Azevêdo said. “Of course, there is no ‘one size fits all’ solution. Each country should try to figure out their own solution, find the appropriate mix of policies to respond to their particular needs.” His full speech is available here. The WTO and the Swedish government will be working jointly to deepen research in this

area by compiling a dossier of adjustment policies in selected countries. This will build on the 2017 WTO World Trade Report, and draw further lessons from different experiences that countries have had. It will aim to identify success stories which can then further inform conversations on these issues.

The Swedish Prime Minister stressed the importance of a partnership that focuses on the potential of sound industrial relations and social dialogue as a means to contribute to decent work, quality jobs and increased productivity and by extension to greater equality and inclusive growth. Sweden is the clear example that “trade is the engine of the global economy,” MrLöfven said.

“Trade is the greatest generator of wealth in history. It has raised standards of living worldwide. Millions of people have been lifted out of poverty. We have all benefited from it. But – and there is a but. When inequalities increase, as we have seen over the last few decades, and the few amass wealth at the expense of the many, the economy in the long run is destabilized. There is growing international consensus that reducing inequalities is one of the great challenges of our time.”

Other leading speakers in the High-level Seminar were Guy Ryder, Director-General of the International Labour Organization (ILO); Børge Brende, President of the World Economic Forum; and Ethiopia’s Minister of Labour and Social Affairs, Abdufatah Abdullahim Hassan; as well as representatives from the Organisation for Economic Co-operation and Development (OECD), business, unions and economists specialized in trade issues.

Guy Ryder talked about the need to address the growing public scepticism over the benefits of free trade and globalization, and rising distrust in political solutions. “Trade is the absolutely necessary engine of growth and greater prosperity, but those benefits do not come automatically. They require policy intervention and we need to think much more carefully perhaps than we have done in the past about what those interventions look like and how we make them happen,” he said.

Mr Ryder highlighted that the ILO and the WTO have been working much more closely on this issue in recent years, especially with regards to inclusive trade. However, he said, more needs to be done: “It is time to bring back an integrated approach to international policy-making. We have the framework for doing that in the form of the UN’s 2030 development agenda. The global dialogue can help international dialogue as much as it can help the national dialogues that we need.”

From that perspective, the overall objective is for the Global Deal to strengthen workers, businesses and societies alike, and to become a concrete tool to help achieve UN Global Goal 8 to promote decent work and economic growth, and Goal 10 to reduce inequalities.

A number of governments, businesses, trade unions and other organizations are already pursuing this initiative together with the WTO, the ILO and the OECD. The Global Deal also builds on voluntary commitments from its numerous partners.

Source: WTO Website



NATCOM –SCALE 2017

16-17.11.2017 AT BANGALORE

MR. SRINIVAS V. RAO
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IIMM Bangalore Branch has all the reasons to feel proud about the success of two day mega event, NATCOM –SCALE 2017, which recently concluded on 17th November 2017 at Vivanta by Taj, M.G. Road, Bangalore. The event got praises, accolades for its organizing, hospitality, choice of theme and a host of excellent speakers who unequivocally endorsed the possibility of today's business facing enormous challenges such as technology around the world, traditional manufacturing industry in the threshold of a digital transformation that is accelerated by exponentially growing technologies, Augmented Reality (AR), Autonomous drones, Block Chain, Sensors, 3D printing, Internet of Things (IoT) Internet of Everything (IoE) vertical Reality (VR) Robots, were some of the topics that were discussed at length.

The NATCOM and 16th edition of SCALE of IIMM Bangalore, with the theme – “**Technology Challenges for Next Generation Supply Chain and Logistics**” was very apt which speaks about the implementation of advanced technologies in their respective organizations, which pave way for their growth and fundamentally change their status as well as transform market dynamics across a whole range of Industries.

NATCOM –SCALE 2017– (Day -1 - 16.11.2017 – Morning Session) –began with an invocation to Lord Ganesha rendered by Ms Vidushi Asha Subramanyam. Mr. Srinivas V. Rao, Branch Chairman of IIMM Bangalore, thereafter welcomed the august gathering consisting of experts from various sectors, consulting academia and government bodies both national and international to the exposition and members of IIMM fraternity who have come from across India. The sectors that were represented were Aerospace, Manufacturing, Automotive, Infrastructure, Auto Components Industries, information Technology, Logistics, Health Care and Pharmaceuticals and education.

Dr. C. Subbakrishna, Chairman – NATCOM –SCALE 2017 spoke about the sojourn journey of NATCOM -SCALE till to-date and also giving a brief on the theme.

Chief Guest Dr. Annadurai, Director ISAC, said that analyzing the current scenario, in depth, innovation is not invention, India has proven record of exemplifying innovative efforts. That was a heartening talk to begin with and to open the eyes of the audience.

Ms. T.S. Ushasri, Sr. Vice President and Managing Director of Manhattan Associates has a rich experience in providing logistics solutions on supply chain operations. In her address as Key note Speaker she brought out that Indian Logistics companies were being faced with the effect of continuous globalization and that logistics and

supply chain abilities of Indian Companies will be critical in competing in this globalizing market place. She added “the supply chain of the future will be more complex and prone to global volatility”. India as a country has the youngest generation in the world and India has to leverage on that to stay competitive in the future.

Mr. D.P. Nagendra Kumar Principal Additional Directorate General – Intelligence for GST – Bangalore, in his speech as Guest of Honour, said that India's greatest tax reform-replacing an array of provincial duties with a nationwide goods and service tax – is transforming the logistics industry in country where moving stuff around was notoriously difficult to do. The Goods and Services Tax (GST) raterecently reduced on 178 household items including detergents, shampoos and beauty products, from 28% to 18% effective from 15th Nov 2017. Significantly the impact of GST is revolutionary transformation of economy, trade and business towards complete digitalisation. With GST India will move towards an IT –enabled, better, bigger business and economy with a clean Swach Bharat concept. The benefit of reduction in the GST rate has to be passed on by the suppliers to the consumers by way of commensurate reduction in prices. The reduction in GST rates is also expected to encourage domestic demand and investment.

Alongwith the inaugural function various IIMM awards to dignitaries were presented and honored. The Best Chief Executive Officer of the Year -2017 (Public Sector) was awarded to Shri G. Kumar Naik, IAS, Managing Director, Karnataka Power Corporation Ltd, Bangalore, (KPCL) and Corporate Excellence Award (Public Sector) was awarded to Oil and Natural Gas Corporation Ltd. Shri Shashi Shanker- Chairman and MD New Delhi received the award. The Life Time Achievement Award was given to Shri Subash V. Lovekar, Bangalore, who rendered yeomen service to IIMM in various capacities in the upbringing of the education and its related activities. The Distinguished Member was awarded to Lt Gen Giri Raj Singh, SM, Director General of Ordnance Services of Army Ordnance Corps, who is one of the largest inventory holder, next only to Railways, for the entire Indian Army making available from a pin to a battle tank for the armed forces.

The National President Mr. O.P. Longia, in his address, spoke about the various activities of IIMM on educational courses, professional activities of IIMM like Training Program, Consultancy, etc.,. He also defined Supply Chain Management to brush up the memories of audience and said that SCM is a major contributor and without which no industry can survive.

Mr. P.M. Biddappa, NC Member & Convenor NATCOM-SCALE 2017 proposed vote of Thanks.

Thereafter technical session commenced with topics like: Block Chain Technology addressed by Dr. Rangan V. CEO Microgram, Technology Challenges in SCM and Logistics by Mr G.S. Raghu, Head Supply Chain, Coca Cola. After the Lunch Break it was Mr. Nandi, Managing Director of AETHON Energy LLP who spoke on Innovative Applications in Solar (Renewable Energy), Mr. N. Venkatesan, HCG gave presentation on Health Care Supply Chain and Mr. James M. Amulu, Director SAP spoke on Digital Supply Chain. After the tea break Prof. G. Raghuram, Director IIMB, spoke on the subject Future trends in railway and port Logistics. Dr. S.G. SreekanteswaraSamy, Executive Secretary, KSCST, IISc, spoke on India-Israel R & D Program. The speakers agreed those education skills of Indian, English speaking ability, Intellectual proprietary rights protection and the ability of the Indian Suppliers as strengths for India to compete and they were extremely positive, changing technologies challenges for next Generation SCM and Logistics. The Day 1 concluded with a vote of thanks proposed by Mr. K.V. Sudheendra, Branch Vice Chairman IIMM Bangalore.

NATCOM –SCALE 2017 – (Day -1 - 16.11.2017 – Evening Session) marked with the beginning of Annual General Body Meeting of IIMM and National Council Meeting. This was followed by an interesting cultural dance program rendered by Mr. Satish Babu and his team and also coupled with Award Ceremony giving away awards to various professionals like National Award, IIMM Best performance branches, both for Metro and Non-Metro, bagged by Bangalore and Aurangabad for the professional development of IIMM Activities in their respective regions. IIMM Bangalore also hosted a dinner to the delegates present for the function consisting of NC's, NECs, Past Presidents and Past Chairmen of IIMM Bangalore Branch and special invitees amongst others. .

NATCOM –SCALE 2017 – (Day -2 - 17.11.2017 – Morning Session) - commenced with a welcome note from the Mr Srinivas V. Ra, Branch Chairman followed by a brief session by Dr. C. Subbakrishna. Chairman, NATCOM – SCALE 2017 on the previous day's events.

Newly elect National President Mr.G.K.Singh, thereafter addressed the gathering. Key note address was delivered by Dr. Anil Chinnabhandar, Sr. Vice President, Land Mark Group, to be followed by an address by Chief Guest Mr. Keshav Kumar, CEO, L&T Construction Eqpt who spoke on Genxt Supply Chain Trend and challenges in construction equipment industry. The dignitaries on the dias thereafter released NATCOM –SCALE 2017 souvenir, which was conspired by Mr Akash Gupta, EC Member of IIMM Bangalore Branch. Post release of the souvenir, there was also release of a book titled "Next Generation Digital Supply Chain in India – Efficient, Fast and Tailored" authored by Dr Rabi Narayan Padhi, a Fellow IIMM Member. The event also marked signing of an MOU by IIMM (CRIMM) with Techno India University on promoting of Ph D course in SCM. Mr. Asok Das Gupta, Co-Chairman, CRIMM briefed about the MOU and addressed the gathering. Dr. Goutam Sengupta, VC, Techno India University briefed about activities of University and also addressed the gathering. Mr. M.S. Shankar Narayanan, Convenor –NATCOM –SCALE 2017

proposed vote of thanks.

The 2nd day technical session commenced with Mr. Ashok Sharma, Past NP IIMM and Past IFPSM President who spoke on the subject of "Greening the Supply Chain - Social responsibility or Smart Strategy", Mr. Panigrahi, spoke on GST –Impact and Strategies to leverage cost benefits through supply chain, Mr. Ashutosh Dixit, Sr. Director Southern Region, DHL Global Forwarding. Mr. Deepak Venkatesh Agarkhed, GM Facilities, Sakra Hospital spoke on Hospital Supply Chain and Dr. Rabhi Narayana Padhi, HAL Vizag gave a very good presentation on Next Generation Digital SCM.

Post lunch break, the crowd witnessed a vibrant and heart warming session by Mr. T.V. Venkatesh and his colleague Ms Niyati Kala, faculty from the Art of Living International Centre on Leveraging Self Mastery to **Achieve Collaborative Excellence –Intro by Corporate Programs AOL**. This was followed by a power panel discussion on the theme, which always triggers a thought process and feeds led by Mr. S.B. Lovekar, Former Director Bosch Management Services and Life Time Achievement Awardee who moderated the panel which had eminent experts from the supply chain strata consisting of Dr. Balasubramanian, CEO (Theme Works Analytics), Mr. Vidya Shankar IAS (Retd), Mr. Daniel Kumar, Director, UTC Aerospace Systems India Pvt. Ltd., S, Dr. (Mrs) Chandra Sen Muzumdar, Supply Chain Expert and faculty from MS Ramaiah Institute of Applied Sciences. The panel of speakers had a wonderful discussion on the, who were drivers of growth for the supply chain industry.

The event concluded on a fantastic note delivered by Mr. Srinivas V. Rao Branch Chairman, with the NATCOM flag handed over in a glittering ceremony to the next organizers, IIMM Aurangabad in 2018 and thereafter thanking one and all for their active participation and also to the various organizing committee members.

The NATCOM –SCALE 2017 committee consisting of EC / NC and office staff of IIMM Bangalore Branch along with the past senior members created history of sorts by setting various benchmarks, some of which includes : (a) having a paid delegates of 250+ on both the days; (b) handing over a cheque of Rs. 2.50 lakhs to NHQ towards the branch contribution for hosting the NATCOM / SCALE 2017 event; (c) handing over a cheque of Rs. 50K to IIMM Aurangabad branch, who will be the next NATCOM 2018 hosters. The NATCOM – SCALE 2017 was ably organized under the leadership of Dr. C. Subbakrishna, along with convenors Mr. P.M. Biddappa and Mr MS Shankar Narayanan, Mr. V. Harish, Organising Committee, Mr D Subramani, VP (South), Mr. C.L. Kapoor, Chairman –Reception Committee duly supported by Mr Viswanathan, Mr Haroon and Mr Lakshmaiah, Mr. K.C. Harsha, Technical Committee, Mr. Paul George, ably supported by Mr Subash, as the Master of Ceremony, Mr Srinivas V. Rao, Branch Chairman with active support from EC – Mr KV Sudheendra, Mr P Sengottaiyan, Mr Mahesh, Mr Achyutha Rao, Mr Akash Gupta, Mr Sham Sundar, Mr Nadeesh, and Mr GS Raju.

NATCOM – SCALE 2017 will thus, be a memorable event to one and all who witnessed them to its finality !!

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TECHNOLOGY CHALLENGES FOR NEXT GENERATION SUPPLY CHAIN AND LOGISTICS

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Introduction : Supply Chain is changing and evolving into something new every minute, every hour, every day through invention and development of various next generation technologies which will affect our lives in personal, social, economical and global in general. Down the line, our day-to-day job in procurement might be radically different. Compelled and enabled by the digital transformation of business, we might be spending much less time on administrative tasks and be able to focus on more strategic internal and external collaboration and might be part of a smaller team performing only core functions.

Today's emerging technologies are more concerned with speed, accuracy, security and seamless delivery. These technologies include Internet of Things (IoT), Drone, Driverless vehicle, Artificial Intelligence, Augmented Reality, RFID, Cloud Computing, Bid Data Analytics. These emerging technologies and applications will forever change the industries of manufacturing, supply chain, logistics, and transportation. Let's us look at the next generation technologies that are driving growth in supply chain and logistics industries.

So what makes a next gen supply chain?

Industry 4.0

So what is "industry 4.0?" It is a broad vision of tomorrow's manufacturing: Products finding their way independently through the production process. In intelligent factories, machines and products communicate with each other, cooperatively driving production. Industry 4.0 connected, intelligent products that communicate with users, new digital business models that harness collected data to offer additional services and as a service products, products on the assembly line that tell shop floor machinery how they are to be processed.

The Internet of Things (IoT) : The Internet of Things (IoT) is a revolutionary manufacturing technology that allows electronic devices connected to each other, within the existing Internet infrastructure, to communicate with one another without human intervention. The application of the Internet of Things (IoT) along with cloud-based GPS will make it possible to keep track of individual items and their conditions. IoT makes use of Radio Frequency Identification (RFID) chips that "talk" to each other. Chips attached to individual items will transmit data such as identification, location, temperature, pressure, and humidity etc., The implication of this capability will be immense. Goods will

no longer be lost or misplaced in transit since each product will transmit its location. With immediate notification come direct action and the avoidance of damaged goods when the chip signals oncoming adverse weather conditions, such as high temperature or humidity. Not only that, they will also be able to transmit traffic conditions and drive-specific data, such as average speed and driving patterns back to the central office. Third party logistics providers, who adopt this type of technology, are surely to reap the rewards of highly satisfied customers will ensure the fastest reach to customer at his choice of location with his customized requirements. IoT benefits existing supply chain processes spanning asset utilization, warehouse space optimization or production planning. IoT presents an opportunity for supply chain groups to co-develop new information-based solutions for individual customers or markets.

Cloud Computing : Cloud computing is the practice of using a network of Internet-connected remote services along various points to store, manage, and process data. Many shipping and logistics companies are already using cloud computing, to cut costs, reduce their dependence on local databases and streamline their operation. Cloud computing facilitate agile, real-time communications between difference levels of the supply chain which helps companies at each level to collaborate quickly and respond to problems more effectively.

Cloud based supply chain are more scalable and dynamic which allows them to counter the problems of continuous shortening of product and service lifecycle and increasing competitive threats much more efficiently than infrastructure intensive supply chains. This reflects positively in the financial result of the organization.

Drones : A drone is an unmanned aircraft that can either be controlled remotely or left to fly autonomously through software controlled flight plans embedded in their system. Drones are small, light, inexpensive to operate and can go where other modes of transportation cannot. In the future, 3PL companies will use drones to deliver small packages quickly in both urban and remote areas. Because of their high speed and precision, the use will shorten the supply chain and significantly reduce the costs of transportation. Already technology is available wherein Drones are going to charge electric vehicle when battery is running low.

Driverless vehicles : Although still in the trial phase, driverless vehicles have shown great potential as tools

for logistics and supply chain management. The ability of driverless vehicles to sense the environment and navigate with zero human interventions makes these futuristic cars/trucks ideal for delivering products to customers. 3rd party logistics providers may substantially reduce their overhead by using driverless vehicles for delivery.

Key benefits of driverless vehicles are improved safety through a reduction in driver error, lower environmental impact through having fewer vehicles on the road and more efficient fuel consumption, higher efficiency through speeding up traffic flows and by allowing freight trucks to travel 24/7 without requiring driver rest time.

Big Data and Predictive Maintenance Technology : Manufacturing industries can significantly increase their efficiency and productivity with the technologies that allow them to collect process and measure big data in real time. These technologies include electronic devices that connect factories through the internet and web pages that double as dashboards for controlling the processes. Predictive maintenance technology helps predict snags and defects and thus cuts downtime and costs. In the future, manufacturers will implement big data and predictive maintenance technologies in every area of manufacturing.

Big data is an end-all solution to supply chain problems, it provides supplier networks with greater data accuracy, clarity and insights leading to more contextual intelligence shared across supply chains. Big data and advanced analytics are being integrated into optimization tools, demand forecasting, integrated business planning and supplier collaboration and risk analytics at a quickening pace.

Augmented Reality : Augmented Reality will increase Improve the handling of goods and speed of delivery Augmented reality (AR) provides a direct or indirect view of the real world augmented by computer-generated sensory inputs, including sound and video. AR gives you an enhanced view of the world around you in real time and makes you more aware of your environment. In the future, employees at 3rd party logistics providers will use AR technology, such as wearable devices, to gain critical information about the freight they are handling, such as contents, weight, and destination. Understandably, such visibility through AR technology will improve the handling of goods, increase the speed of delivery, and reduce overall costs.

With Augmented Reality the staff can view critical information about each parcel contents, weight, handling instructions, destination which will facilitate the loading, handling, and delivery process.

Autonomous Robots :Robots in manufacturing are evolving for even greater utility, becoming more autonomous, flexible, and cooperative. They will interact with one another and work safely side by side with humans. These robots will cost less and have a greater range of capabilities than those used in manufacturing/ supply chain today. Now, robots with computer screen

faces and automated adaptability can perform multiple tasks, including materials handling, loading, unloading, product inspection, light assembly, sorting and packaging.

Crypto Currency : A crypto currency is a digital asset designed to work as a medium of exchange using cryptography to secure the transactions and to control the creation of additional units of the currency.

Blockchain is the technology behind Bitcoin and other crypto currencies. Blockchain is a protocol for a digital ledger that enables proof of ownership and the transfer of ownership from one entity to another without using a trusted third party intermediary (like a bank). The value that is transferred can also move through an extended supply chain while ensuring that what occurs at each point in the chain can be chronologically recorded. It enhances transparency in the transaction, provides greater stability and gives better security.

Green Supply Chain : Green Supply Chain in integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing process, delivery of the final product to the consumers and end of life management of the product after its useful life.

Implementing Green supply chain increases revenue, reduces costs, increase assets utilization, enhanced customer service. It reduces waste, increase energy efficiently, reduced air emissions, reduced water emissions, reduced fuel consumption. It also impacts on the society, reduce community impacts, noise reduction, traffic congestion avoidance, health, safety and security.

Google Glass & Voice Technology : Google Glass contains the fundamental components of any computer or Smartphone. This technology is more beneficial to logistics industry making warehouse workers more effective and efficient. It allows workers to see how far away they are from items in the warehouse and used way find arrows to help them quickly locate item stock that needs to be pulled.

HOW EMERGING TECHNOLOGIES ARE CHANGING SCM / LOGISTICS INDUSTRY

- ❖ Uber is just a software too, they don't own any cars, and are now the biggest taxi company in the world.
- ❖ In 2030 computers will become more intelligent than humans
- ❖ Facebook now has a pattern recognition software that can recognize faces better than humans.
- ❖ Already Autonomous cars are in the testing phase, we don't need to own a car anymore, we can call a car with our phone and it will show up at our location and drive to our destination.
- ❖ Electric cars will become mainstream about 2020. Cities will be less noisy because all new cars will run on electricity.
- ❖ In China, they already 3D printed and built a

complete 6 storey office building, by 2027 10% of everything that's being produced will be 3D Printed.

- ❖ Bitcoin may even become the default reserve currency of the world.

CHALLENGES: Modern supply chain management is entering towards greater levels of sophistication in addressing increasing levels of product variety, fulfillment options and customer satisfaction at the lowest possible cost. In order to have seamless adaption of technologies into Supply chain, companies need to look into the challenges and make strategy in order move ahead with time and technology:

1. Untamed economy, impending collapse : Unchecked materialism, mass consumption, and tumultuous growth cause demand for logistics and transport services to soar. A global transportation "supergrid" ensures a rapid exchange of goods between centers of consumption. But as climate change advances, supply chains are increasingly disrupted.

2. Mega efficiency in "megacities : Megacities have become champions of collaboration, and highly efficient traffic concepts have relieved congestion. A global supergrid of mega transporters and space transporters supports trade between megacities. The logistics industry has been entrusted to run city logistics, utilities, and system services for airports, hospitals, and retail.

3. Paralyzing protectionism : Triggered by economic hardship, excessive nationalism and protectionist barriers reverse globalization. High energy prices and scarcity of supply lead to international conflicts over resources. Governments view logistics as a strategic industry. As relations between some blocs and countries become strained, logistics providers act as intermediaries in international trade brokerage.

4. Global resilience, local adaptation : Frequent catastrophes caused by climate change disrupt supply chains and lean production structures. A move toward redundant production systems and from global to regionalized supply chains allows the global economy to better weather troubling times. The logistics sector makes supply security a top priority, with backup infrastructure to guarantee transport in unstable and hazardous times. The new world of supply chain risk means preparation for widespread, systemic disruption in our immediate future.

5. Cyberattacks : Traditional data security practices are not much helpful if any hardware or software component of the system is built to send the inner data to outside of the system or leave the back door open for intruders intentionally. The attacking technology like virus inclusion in software or hardware is on rise so, any hardware Trojans may be inserted in any phase of the supply chain for the purpose of hacking.

In order to protect from cyber attacks, companies should include expanding security procedures to include vendors, partner and even customers. Auditing potential vulnerabilities will give company insight into their cyber

preparedness.

Conclusion : In today's highly competitive marketplace, it's imperative for businesses to innovate new ways to streamline their supply chain and optimize productivity. With the aid of modern technologies such as IoT, Cloud Computing, Artificial Intelligence, Augmented Reality, Analytics, and Big Data is set to make supply chains more optimal and efficient and can create better visibility within supply chain and enables to have more control over the business and stay ahead of the competition. Technology can help to simplify supply chain management process, and control over inventory, and help to reduce operational costs.

- As much as Rs.42,000 crore has already come in as taxes so far in the first monthly filing under the new Goods and Services Tax (GST) regime and the revenues are expected to increase.
- The U.S. logistics business, which delivers 48 million tons of freight (worth about \$48 billion) daily and already employs roughly 6 million people, operates mostly behind the scenes and the logistics business will be looking to fill about 1.4 million jobs, or roughly 270,000 per year, by 2018.
- Amazon's annual savings for a logistics company is projected to be at least \$2 billion in the pessimistic forecast and \$10 billion in savings for the midrange forecast and expect to save a lot more.
- \$1bn GM's investment in self-driving car for developing software for self driving cars
- IDC says that worldwide revenues for big data and business analytics will grow from \$130.1 billion in 2016 to more than \$203?billion in 2020.
- Coca-Cola, Atlanta, Georgia Supply Chain and Logistics Improvements to Streamline Order Processing has achieved net result?of \$2 million savings in capital costs, a 10% improvement in worker productivity, and outbound order accuracy of 99.8%, far above the historical number of 90%.

Customization is the order of the day and to sustain in today's supply chain management. Collaboration and coordination will be the keys to achieving the benefits of supply chain management. Customer centricity and the need for supply chains of one, along with the need to maintain or increase profit margins, require companies to rapidly adopt the structural and technological trends in order to stay ahead of the competition. By integrating modern technologies into the business plan, can greatly enhance the supply chain through cutting costs and improving customer satisfaction and gaining more market share. Supply chains are no longer a cost of doing business; it has become a platform for growth enabling companies to open new markets and channels to reach new customers globally. The mantra is simple and straight, constant innovation to provide value and satisfaction to end customer.





BIOMETHANATED SPENT WASH FOR SUPERCAPICITOR MATERIALS

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In this study we have focused on value-addition to one of the most recalcitrant wastes produced in some of the largest countries in the world. Sugar and distillery effluents have plagued the surface and ground waters of Brazil and India, two of the largest sugar producing nations in the world. Treatment processes like coagulation-flocculation, adsorption, membrane filtration etc. have been employed in recent times but lack efficiency and creates an additional issue of solid waste management.

Our research group have successfully demonstrated the use of solid sludge extracted from the biomethanated spent wash as a carbon source for the preparation of energy storage materials. Our approach achieves a two-faceted target of distillery wastewater pre-treatment and value addition to end industrial waste product. Instead of going into landfills and generate leachate, the solid sludge generated was activated with a metal precursor

and calcined at elevated temperatures under inert atmosphere. The inherent presence of sulfur and nitrogen containing impurities in the sludge acts as dopants and in combination with the metal precursor provided an alternate charge storage mechanism to the material and makes suitable for supercapacitor applications. Electrochemical studies exhibited good charge-discharge cycles with almost 100percent capacitance retention even after 1000 cycles.

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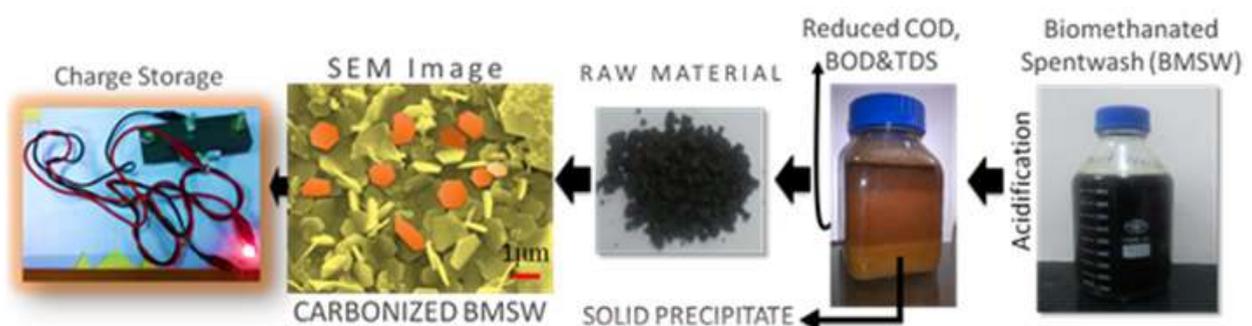


Figure 1. Schematic showing raw material extraction steps from biomethanated spent wash produced in distillery industry.



CONNECTING THE COUNTRY: DEDICATED FREIGHT CORRIDORS

Upcoming Dedicated Freight Corridors will play a major role in India's economic development. A closer look.

- Railways
- Ports And Shipping
- Infrastructure
- Focus Sector

Spanning 66,030 route km, India's rail network is the third-largest in the world. Further, India is the fourth-largest carrier of freight globally.¹ Daily, Indian Railways carries 23 million passengers on 12,000 passenger trains while its 7,000 freight trains transport 3 million tonnes of freight.² Over 90% of coal utilised in the country is transported by the rail network.³ Undeniably, the sector plays a critical role in the development of the economy.

DEDICATED FREIGHT CORRIDORS : 'Dedicated Freight Corridors' are planned to be 'freight-only' corridors which will make it cheaper, faster, and more reliable to move goods between industrial heartlands in the North and ports on the Eastern and Western coasts. These freight-only railway lines along congested transport corridors were envisaged to ramp up the average speed of freight, which had reduced considerably to 20 kmph.

The conceptualisation of Dedicated Freight Corridors can be understood clearly as one delves into Indian Railways' freight operations scenario in the past. It was majorly the Golden Quadrilateral, linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah and its two diagonals (Delhi-Chennai and Mumbai-Howrah) comprising 16% of the route, that carried over 52% of passenger traffic and 58% of freight traffic. This made the trunk routes highly saturated, with line capacity utilisation reaching as high as 150%. Thereby, these freight corridors were proposed to ensure a more reliable, economical and faster transportation of goods.

The cost for these Dedicated Freight Corridors along the Eastern and Western routes, spanning 3,360 route km, has been estimated at USD 12 Billion. With overall progress of over 35% achieved so far, these corridors seek to bring a paradigm shift in Railway Freight Operations in the country, thus providing relief to the heavily congested Golden Quadrilateral.

A Special Purpose Vehicle, 'Dedicated Freight Corridor Corporation of India Limited' (DFCCIL) has been setup under the Ministry of Railways to facilitate the functioning of these corridors.



To resolve the increasing need for road decongestion, accident reduction and ensuring energy security, the Government has launched this initiative to aid growth of rail transportation in India. The corridor will be built along the Golden Quadrilateral that connects Delhi, Mumbai, Chennai, Howrah and its two diagonals (Delhi – Chennai and Mumbai – Howrah) that constitute a total of 10,122 kms. These corridors carry the heaviest traffic and are highly congested.⁴

With the construction of these Freight Corridors, Indian Railways will open new avenues for investment and greater economic development. This will also lead to the construction of industrial corridors and logistic parks along these routes, thereby making the industrial ecosystem more competitive.

The new corridors will permit the trains to carry higher loads, in a more reliable manner. These lines are also being built to maximise speeds to 100 km/hour, up from the current average freight speed of 20 km/hour. They will carry a capacity of 6,000 to 12,000 gross tonne of freight trains. Additionally, the DFCs will also reduce transit time from freight source to destination.⁵

EASTERN DEDICATED FREIGHT CORRIDOR : The 1,856-km long Eastern Dedicated Freight Corridor will be divided into two segments:

- An electrified double-track segment of 1,409 km between Dankuni in West Bengal and Khurja in Uttar Pradesh
- A single line segment of 447 km between Ludhiana – Khurja – Dadri

The Corridor will pass through Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand and West Bengal. 83% of contracts have already been awarded.

This project is expected to benefit the transportation of coal for power plants, steel, food grains, finished steel and cement. The total traffic in 'up' direction is likely to reach 116 million tonnes and 28 million tonnes in 'down' direction in 2021-22, a significant part of which would get diverted to the Dedicated Freight Corridor.⁶

In addition, Logistics Parks have also been planned in Kanpur and Ludhiana. These parks will be built by a public – private partnership and will boast of best-in-class infrastructure, in addition to a well-connected road and rail network.

WESTERN DEDICATED FREIGHT CORRIDOR : Covering a distance of 1,504 km, from JNPT to Dadri via Vadodara-Ahmedabad- Palanpur-Phulera- Rewari, Western DFC will pass through Haryana, Rajasthan, Gujarat, Maharashtra and Uttar Pradesh. It is proposed to join the Eastern Corridor at Dadri. All contracts for the corridor have been finalised and are in progress.

The Western Corridor primarily comprises of container traffic from JNPT and Mumbai Port in Maharashtra and other ports, including Pipavav, Mundra and Kandla in

Gujarat. This corridor also facilitates transportation of fertilisers, food grains, iron and steel and cement, among other commodities.⁸ The share of container traffic is expected to increase and reach a level of 80% by 2021-22. Further, the rail share of container traffic on this corridor is set to increase from 0.69 million TEUs (Twenty-foot Equivalent Units, an inexact unit used for describing cargo capacity) in 2005-06 to 6.2 million TEUs in 2021-22.⁹

There are plans to set up Logistics Parks on the outskirts of Mumbai, especially near Kalyan- Ulhasnagar area or Vashi – Belapur. Additionally, other parks have been proposed in Vapi, Ahmedabad and Gandhidham in Gujarat, Jaipur and Delhi – National Capital Region. These locations have been chosen since they are significant production centres and support industries. They are also easily accessible by rail and road networks.¹⁰

THE ROAD AHEAD : The Ministry of Railways has plans to build four more Dedicated Freight Corridors. The DFCCIL has been assigned the task to conduct preliminary engineering and traffic survey for the proposed projects. Next in line are East – West Corridor (Kolkata – Mumbai) which will be approximately 2,330 route km in length; North – South Corridor (Delhi – Chennai) of approximately 2,343 route km; East Coast Corridor (Kharagpur-Vijaywada) close to 1,100 route km; and the Southern Corridor (Chennai - Goa) of approximately 899 route km.¹¹

The commissioning of the DFC projects will not just help in revitalising the freight transport in the country, but will also ensure an efficient, reliable and economical movement of goods. The project is also likely to result in a significant reduction in the emission of greenhouse gases and save over 450 million tonnes of carbon dioxide in first 30 years of operation.¹²

Source:

- 1 <http://pibphoto.nic.in/documents/rlink/2017/jan/p201711801.pdf>
- 2 <http://pibphoto.nic.in/documents/rlink/2017/jan/p201711801.pdf>
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WHAT'S IMPORTANT TO APPLY RFID TECHNOLOGY CORRECTLY IN APPLICATIONS WHAT'S OLD IS NEW AGAIN

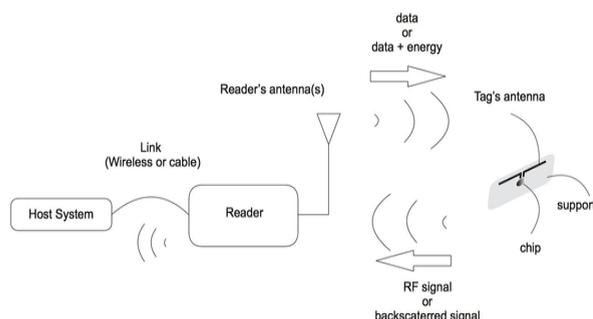
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Not much draws the attention of industrial people better than discussing the Internet of Things (IoT), machine-to-machine (M2M) and other wireless-technology acronyms such as LoRa (long-range, low-power wireless), 6LoWPAN (Internet Protocol, version 6, low-power wireless personal area network) or BLE (Bluetooth low-energy).

However, to improve the resilience of an industrial process, increase your competitiveness or create new services by digitalizing products, the process to be changed, improved or created should be well understood. The technology comes afterward. Nevertheless, to make the difference between what could be a pure dream or an off-the-shelf solution, it's worth discussing how the technology works, what the ongoing and upcoming capabilities are and how other stakeholders will implement it.

Radio-frequency-identification (RFID) technology is quite old. The trouble is that there are many different technologies behind this simple acronym, and often technology providers only master one of those, so it may be difficult to determine if the proposed solution is a good one. So, let's go back to basics and take a moment to revisit how RFID works.

An RFID tag, consisting of an electronic chip connected to an antenna, sends information to an RFID interrogator, often called a reader (Figure 1). The interrogator requires a power source such as a battery or external supply, but what about the RFID tag? The microelectronic chip needs to be powered to operate. In most cases, just adding a power supply to the RFID tag is not the answer. The RFID tag would be too big and expensive, and maintenance of the battery could be difficult. So, the energy is provided by the reader, using radio-frequency (RF) waves each time it wants to communicate with the tag. This is called "tele-supply."



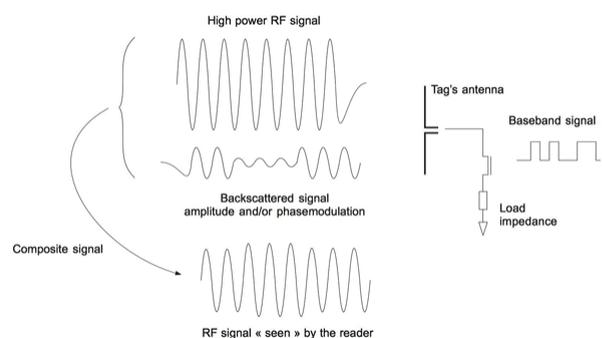
RFID system components

Figure 1: Main elements of an RFID system include an RFID tag with electronics and antenna and an interrogator with antenna connected to a controller.

Using this RF wave energy, the RFID chip can decode the commands coming from the interrogator and respond to these commands or transmit information without waiting for the interrogator to request it. The way to respond to an interrogator's commands is, like the tele-supply, a characteristic of RFID systems.

Some RFID chips have an embedded radio frequency transmitter capable of generating its own RF signal, called active RFID. This type of transmitter is more complex and costs more. Furthermore, the energy recovered by the remote power supply may not be sufficient to properly power such a transmitter.

To avoid this complexity while being able to communicate with the interrogator, the RFID tag modifies its own characteristics such as impedance or radar equivalent surface. This will have the effect of modifying the characteristics (amplitude and/or phase) of a signal reflected by the tag toward the interrogator. This technique, called backscattering or load modulation, is the basis for communication of passive RFID tags—RFID chips with no embedded RF transmitter (Figure 2).



Backscatter for optimization

Figure 2: Backscattering is a communication technique that optimizes an RFID tag's signal and read range.

RFID is not the only technology for automatic identification and data capture. Barcodes (1D or 2D) and optical character recognition (OCR) are widely used and have the advantage of being, in their simplest forms, relatively inexpensive. However, RFID has advantages

over these techniques.

Based on the radiation or propagation of electromagnetic waves, RFID technology doesn't require optical visibility for tag reading, although metal and some other materials can strongly disrupt this reading, requiring special tags to overcome this issue. Contactless reading is another advantage of using RFID. Depending on the frequencies and tag sizes, the distance to which a tag can be read ranges from a few millimeters to a few meters for passive, batteryless technologies. With a battery and active technology, this distance can exceed 100 meters without difficulty. Another advantage of RFID technology is its ability to read multiple tags simultaneously. For some communication protocols, the interrogator can identify several hundred different labels in a few seconds. A fourth advantage of RFID lies in the fact that this technology is based on a microelectronic chip. Its content is by definition the unique identification number of the object to which the tag will be attached. Depending on the application, this unique identification number may be longer or shorter. The unique item identifier (UII) could be a 96-bit-long serialized global trade identification number (SGTIN) or a 128-bit long global returnable asset identifier (GRAI). Beyond these identifiers, the chip may have a programmable or rewritable memory area enabling the user to access information directly by reading the contents of that memory. It can also add or modify this information during the life of the object. This information can be encrypted, and, with access rights management, several users can share the memory area.

With all these features, a common question when specifying an RFID system is the read distance of an RFID tag. While important, it is only the first of a series of steps where the user will have to decompose its process and sometimes question its principles to take advantage of the best of these technologies.

ALSO READ: Closer to useful RFID

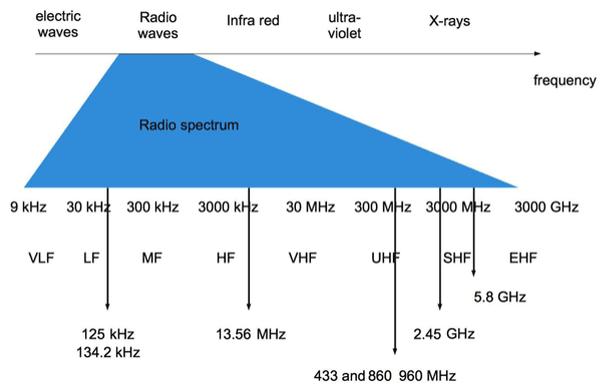
How many RFID technologies are out there?

There are different ways to classify RFID. The most common way is to use the frequency at which the system works, which includes low-frequency (LF), high-frequency (HF) and ultra-high-frequency (UHF). Behind these acronyms, there are physical issues. There are two kinds of systems defined by the coupling—the way energy and communication signals are carried by electromagnetic fields—between tags and readers.

The first classification can be summarized by the fact that the coupling between the interrogator and the tags is either mainly magnetic or mainly electric. It is also referred to as near-field communication (NFC) or far-field operation. When operating in an LF or HF range, the wavelength is so large that the distance between the reader and the tag is small compared to this wavelength creating a near-field configuration where a magnetic field is used to couple a reader and tags. In this case, an antenna's main parameters affecting operation are loop size and the number of turns; but, as magnetic fields

decrease rapidly, these kinds of systems cannot operate at distances greater than 1 meter.

When operating at higher frequencies, the wavelength decreases, forming more of an electromagnetic field. In this case, antennas are mainly based on a dipole pair, and the impedance matching between the antenna and the RFID chip is the main parameter. As electromagnetic fields decrease less rapidly with distance than pure magnetic fields, the read range of passive, batteryless tags increases to a distance of 10 meters (Figure 3).



Frequency of RFID

Figure 3: There are a wide range of available frequencies for use in RFID applications.

A second possible classification can be made according to whether the RFID tag has an RF transmitter, known as active RFID, or backscatters an RF signal from the interrogator, known as passive RFID. A third classification of the RFID systems can be made according to whether the chip embedded on the label is read-only or that new information can be written, once or several times, via commands transmitted by the interrogator.

Finally, a fourth classification can be made according to the communication protocol between the label and the interrogator. In one case, the tag, once present in the interrogator field, waits for a command from the reader to transmit information. This is called interrogator talk first (ITF) protocol. In other cases, the label transmits information as soon as it is activated by the interrogator's energy. This is called tag talk first (TTF). Of course, variants of these protocols can be found in various ISO or proprietary standards.

How to choose the best RFID technology for the application

Some common application questions can be sorted to determine which RFID technology is best-suited. There is no one-size-fits-all technology, so the difficult prioritization of capabilities is required to decide between passive LF, passive HF, passive UHF and active UHF. The examples of RFID applications in Table 1 should help when specifying an RFID technology.

Q1: I need to read tags at more than 30 meters (for locating purposes, for example).

Q2: I need to inventory boxes that contain more than 100 tagged items.

Q3: I need to write a lot of information in the memory of the tag (in addition to a unique identifier (UID, EPC, UII)).

Q4: I want a well-defined reading area.

Q5: I want to read stacked tags.

Q6: I want to read tags with a smart phone.

Q7: I want to follow GS1 general specifications.

Q8: I want to trace some metallic items.

Q9: I want to use RFID in a humid or wet environment.

Technologies	passive LF	passive HF	passive UHF	active UHF
Standards	ISO 18000-2	ISO 18000-3 ISO 14443 ISO 15693	ISO 18000-63 EPC Class1 Gen 2	ISO 18000-7
Frequency	125 kHz 134.2 / 134.4 kHz	13.56 MHz	860 - 960 MHz	433 MHz
Q1	No	No	Yes, with special readers configuration	Yes
Q2	No	No	Yes	No
Q3	up to 8 kbits	up to 64 kbits	typically several bits and up to 64 kbits	around 16 kbits
Q4	Possible	Possible	Difficult	Hardly difficult
Q5	Possible	Possible	Difficult	Possible
Q6	Need an add-on	Native for majority of devices	Need an add-on	Need an add-on
Q7	No	Difficult	Yes	No
Q8	Yes	Yes with special tags	Yes with special tags	Yes
Q9	Yes	Yes	Decreased performance	Decreased performance

What's the frequency?

Table 1: There is no one-size-fits-all technology, so the difficult prioritization of capabilities is required to decide between passive LF, passive HF, passive UHF and active UHF.

Traceability of cutting tools

A machine used to produce expensive, application-critical parts has to be automated to:

- select the right cutting tool, based on the material and the shape to be machined
- manage the use of the cutting tools; old cutting tools need to be replaced or revised.

This will reduce human error and work accidents that may cause a system to shut down because a tool either broke during the manufacturing process, was not operating properly due to being worn out or was not installed in the correct location and was thus being used inappropriately. As more machines are computer numerical controlled (CNC), it becomes easy to use RFID technologies to overcome these issues. Automation can be added using an RFID tag, smaller than a fingernail, that is permanently attached or embedded on the cutting tool. An RFID reader is added to the tool carrier that reads the tag ID to confirm every machining program

uses the right tool. This solution requires reading one tag at a time at a distance less than a few centimeters. When specifying the RFID technology, the significant amount of metallic parts in such a machine must be considered. Lastly, the RFID tag must not prevent proper functioning of the small tool. LF technology is a good choice to fulfill all of these requirements and widely used in industry.

Tracking goods in a conveyance system

Imagine a conveyance system like those you can find in breweries with beer kegs or in warehouses for logistic purposes. These conveyors are often implemented in harsh environments with a lot of metallic parts and rotating machines. In order to automate the tracking and routing of goods, you need to automatically identify those goods. RFID tags will have to be affixed to the items, but you will also need to place RFID readers along the conveyors. You may of course add some fixed readers and antenna or even tunnels, but this requires space. More and more RFID providers propose solutions that can be easily plugged on existing conveyors together with conveyors from manufacturers that propose RFID-ready solutions. Another way to implement RFID could be to directly add readers to an existing machine that already serves another purpose on the conveyor line, such as pallet handlers. Depending on the requirements—for example, number of tags to be read simultaneously or the density of conveyors—you may choose either HF or UHF technology. Today, the trend is clearly to use UHF, whatever the environment, simply because the majority of items are UHF-labeled.

Traceability of tools and other manufacturing devices within a facility

How much time is lost by workers searching for the right tool for a task? Searching for tools reduces efficiency, and sometimes workers may use an inappropriate tool, risking injury. Add to this the fact that some tools have to be revised or calibrated regularly, and this could be a nightmare for the managers. Adding RFID to a tool enables interrogation of a database to determine the location, the number of times used, the purpose of use and who used it last. Every tool has its RFID tag to identify it. Combined with a smart cabinet, the solution allows real-time inventory of available tools.

Each time a worker has a defined task, he first interrogates the smart cabinets to find the required tools. To open the cabinet, an employee badge identifies the worker. Once opened, the worker takes all the tools needed. Closing the cabinet's doors starts an inventory of the contents. Thus, the solution will know who borrows which tools and will be able to give information to other workers, managers and tool providers. Inventory of the cabinet's contents requires the simultaneous read of all the tags. Furthermore, the tools may be returned to different locations in the cabinet. The best solution is to use UHF passive RFID, but because the tools are often made of metal, the RFID tag has to be wisely chosen.

Access control

To manage access to a machine, a production line or a room, identification and possibly authentication of the person is required. Whether the technology used is RFID, fingerprints, magnetic stripe cards or hardware keys, it must be secure and reliable. It is also important to only read the tag when an employee requests access, so the read range should be limited to less than a few centimeters from the reader. That's why HF RFID is widely used in this application. Of course, there are proprietary solutions based on LF RFID, but they are more and more replaced by HF ones.

Another reason why HF is preferred is the deployment of near-field communication (NFC) technology. Smart phones can read or emulate an HF tag, enabling smarter management of access rights. Granting access to someone for just one day and for a given time slot is an example. To enable this feature, a manager sends a secure, encrypted message to the individual's smart phone. The person's smart phone will then be able to emulate an RFID tag to access the building. A car rental company can provide the same feature. If the rental office is closed due to a late arrival, the code can be used to open a car that has an NFC-enabled lock.

Outdoor location of high-value items

Building a fence and hiring security to guard an industrial facility is an option, but as new projects start at different locations, new security problems will occur. One solution could be to tag items with long-range RFID devices and create a radio fence to detect every movement of the tagged items. Whatever the type of site, the tag readers can be configured to cover a defined geographic zone. This solution can detect a theft attempt if the tagged item disappears from the reader's radar and can locate items on the site.

To cover wide areas with a few readers, active RFID tags are required. This requires monitoring of the active tags' batteries. Fortunately, active tags are smart enough to automatically send information to the readers when battery life decreases. Implementing an equivalent solution with LF of HF passive tags would require security gates with RFID readers and installation of fences around the site. Using UHF passive technology would require the installation of too many readers, but could be utilized for tracking items in a limited area such as inside a building.

e-Kanban

RFID technologies can be mixed to create a custom solution. Let's take the example of an e-kanban. A kanban system allows demand forecasting, as all necessary parts are refilled automatically. The supply chain of complex assembly systems can be automated using RFID solutions.

In a classic kanban system, every time a bin is emptied an operator removes the box identifier, such as a plastic card with the box number or item identifier, and places it in a dedicated tray or slot. The person in charge of the supply chain collects the cards and orders all of the needed items.

The first step would be to replace the card with a passive RFID tag. An RFID reader would be used to read the tags, and reordering would happen automatically without error or omission. Additionally, an active tag can be linked to the passive one. Every time an operator removes the active tag, it sends information wirelessly to the server. This information is the ID of the passive tag. As this ID is linked to the content of the box, the server can decode the signal and prepare an order automatically. For the operator, nothing changes. When a box is empty, he removes the active tag and puts it in the tray. Once the box is full again, the operator attaches any active tag back to the bin. This active tag will read the ID of the passive tag and send it when detached.

Download our special report on I/O for an expanding machine environment

RFID as a pure communication protocol

RFID is not only made for identification purposes. It could be used to transfer information between devices. RFID chips can be connected to sensors such as in battery-assisted passive (BAP) RFID tag applications, but it can also have an inter-integrated (¹²C) bus connected to a more complex electronic system.

Let's take the example of an electrical switching box. Adding monitoring of switching devices could become difficult due to the interface needed including the programming, navigation buttons and LCD screen. Furthermore, such an interface adds cost and hardware to the electrical switching box. Instead, an NFC tag, as small as a fingernail, could be added to the switching device. It could provide the ability to send and receive information to a smart phone by developing a simple and efficient HMI to set parameters or monitor the switching device. Once all parameters are set up, the smart phone is tapped on the NFC tag, which triggers all parameters to automatically transfer to the switch box. Tapping the smart phone to the NFC tag also allows collection of tag information automatically. In this example, the NFC tag is used as a contactless communication protocol with a 106 kbit/s data rate.

In conclusion, RFID options are increasingly diverse. A few years ago, there were few choices. Today, the tag size decreases together with the increase of performances. Multiple packaging is available for harsh environments. Tags can be put directly on metal and can survive to temperatures up to 250 °C. With UHF passive RFID, you can read up to 400 tags/s. RFID will no more walk alone, and adding sensors has become commonplace, helping operators to implement qualitative traceability. Choosing the right technology could become a nightmare if the good questions are not asked at the right time. When thinking about a new project or service, RFID by design has to be the main thrust because adding the RFID, even if this is the right technology, to an existing product is always more difficult.





WE NEED SMART TRANSPORTATION SOLUTIONS

RANA KAPOOR

MD AND CEO OF YES BANK AND
CHAIRMAN OF YES GLOBAL INSTITUTE

From conventional transport, India can leapfrog to a shared, electric, and connected mobility future, with huge energy savings. A modern nation is built upon a smart and efficient transportation system. This will require disruptive measures that can address problems ranging from infrastructure challenges to governance inefficiencies. The transport infrastructure sector in India is expected to grow at a compounded annual growth rate of 5.9 per cent, becoming the fastest-expanding component of the country's infrastructure sector.

Government as enabler : The Government has come up with numerous initiatives ranging from Make in India, FAME (Faster Adoption and Manufacturing of Electric Vehicles), Green Mobility Fund, and Smart Cities, to the recently announced projects in high speed mobility, namely high speed trains and the proposed 'Hyperloop' connectivity. The Government is already working on the ₹ 10 lakh-crore National Transport Master Plan which aims to provide seamless movement of freight and passengers across multiple modes of transport. The shipping ministry's 'SagarMala project', which focuses on port-led development of the country, will have several such multi-modal hubs under it. The Centre has also indicated its aim to boost corporate investment in the sector by introducing business-friendly strategies that will balance profitability with effective project execution.

A lot of debate has taken place over the feasibility and profitability of the High Speed Rail (HSR) network. Any progress in reduction of travel-time and enhancing safety of passengers requires not just an upgradation of railway tracks, engines and coaches, but also an improvement in capacity utilisation (around 16 per cent railway network handles more than 60 per cent traffic). The crucial question is: Is it not wise to look further into the future and upgrade to better technologies in addition to upgrading the current rail network?

Around 17.7 million motorcycles and scooters were sold in the country in FY2017, making India the largest two-wheeler market in the world. There is no universally acceptable solution to India's urban transportation challenges. Although the initial idea is to pick the low hanging fruits, for example, carpooling; with cities and number of vehicles growing faster than ever, there is need for a hybrid, sustainable and scalable solution. Experts estimate that India could save 64 per cent energy in 2030 by shifting to shared electric mobility. Further, there can be a drop in petrol and diesel consumption of 156 million tonnes of oil equivalent (MTOE) or 1.8 tera watt-hour energy — enough to power 1,796.3 million homes. This would also result in a significant drop in carbon dioxide emissions. While the idea of electric vehicles never picked up pace in India, mostly due to lack of recharging infrastructure, with significant advancements in battery technologies, it is high time that we focused more into this area. The power ministry has already announced an all-electric car fleet in India by 2030.

Technology-driven solutions : New technologies are making the transportation job easier by overcoming shortcomings, typically by enabling real-time analysis of public transportation routes and traffic patterns. Seeing this opportunity, public sector agencies in many technologically advanced countries

have begun to encourage the use of public transportation through new mobility business models such as on-demand and multimodal trip-planning applications. For instance, integrated payment systems such as London's Oyster and Singapore's EZ-Link allow users to opt for different modes of public transportation through a single smartcard.

Adoption of technology-driven solutions can be seen in the shipping industry as well. Startups around the globe are developing technology-driven solutions. For instance, a Cape Town-based startup has come up with an open platform providing a detailed look at formal and informal public transport options in African cities, thereby improving user-experience and provide emerging cities with crucial transportation data for better planning.

A holistic traffic management approach is necessary for a sustainable solution. IT-enabled smart traffic management and smart transportation solutions can prove to be game-changers. For instance, a GPS-based system will prove to be immensely helpful for people who use public buses. Under this system the user will be provided with real-time information on the current location of nearest buses approaching the bus stop. The user will be able to manage his schedule, thus saving long waiting hours. Besides, such systems help prevent accidents from happening due to overspeeding, by alerting the driver.

Technology-based solutions can also be applied in areas such as 'fleet management'. For example, a last-mile logistics provider helped a Delhi-based courier dispatch company track its fleets in real time. The company receives alerts every time its shipping trucks reach their destination, report to the warehouse or break down.

A collective responsibility : Transportation must be considered the collective responsibility of all stakeholders. The public and private sectors must work together to devise and develop India-specific solutions. The private sector needs to take full advantage of the market opportunities and help transform India's transportation system. Active private sector participation can bring in expertise, capital and latest technologies. Further, citizens should be made active partners in such initiatives through community-driven programmes.

Recent developments in India's transportation system reflect the characteristics of an emerging mobility paradigm. India could leapfrog from the conventional transportation model to a shared, electric, and connected mobility future, by capitalising on a confluence of dynamic technical capabilities, an emerging entrepreneurial culture and building on foundational government programmes and policies. A smart transportation system involving GPS and digital technologies such as Cloud-based services, Big Data and Analytics, and Internet of Things (IoT) will be at the core of any such transformation. While global tie-ups will be enablers, IT companies and new-age technology startups must rise to the occasion and focus on solving the country's biggest problem that will not only support, but accelerate a nation on the move.

Source : www.thehindubusinessline.com



INDUSTRY 4.0—IMPACT ON THE MANUFACTURING SECTOR

ANISH KANARAN

There's no doubt that Industry 4.0, or the fourth industrial revolution as it is being heralded, will have ramifications throughout the manufacturing industry. It has been the subject of positive hype over the last few years—creating awareness of the topic within many manufacturing companies, and contributing significantly to the rejuvenation of a positive outlook for the future. Aside from the hype, a host of connected technologies are advancing rapidly, including high-quality sensors, more reliable and powerful networks, high-performance computing (HPC), robotics, artificial intelligence and cognitive technologies, and augmented reality. These connected technologies, along with 3D printing, cloud computing, mobile devices and big data will change how products are designed and produced, and how data is gathered, stored and analysed. Taken together, these technologies will have a profound impact on manufacturing, in unprecedented ways.

Industry 4.0 was initiated in Europe, but other regions are following suit. In India, the transformative journey of manufacturing into Industry 4.0 has already begun.¹ The Indian government's 'Make in India' initiative is driving wider adoption of Industry 4.0 in order to develop best-in-class manufacturing infrastructure within the country. Local manufacturers have in turn made digitisation part of their long-term business strategies—with a focus on building capabilities, and becoming globally competitive.

Misconception about Industry 4.0: One of the biggest misconceptions about Industry 4.0, the networked economy, and the Internet of Things (IoT) is that they are all the same thing. However, this is not the case. The networked economy is the dynamics of real-time connectivity between people, devices, and businesses. The IoT is the technological foundation or plumbing of this economy, connecting physical devices, people, and businesses to one another through the Internet. Industry 4.0 on the other hand is the outcome of how the networked economy and the IoT manifest themselves within the manufacturing industry.

Will SMEs Benefit?: Industry 4.0 calls for a future of agile, affordable manufacturing, fueled by technology

enablers such as the IoT, 3D printing, cloud computing, mobile devices and big data. Both small and large manufacturers will benefit from these capabilities—they will in fact make it more affordable for small manufacturers to embrace the latest technological advances. Take for example the impact of the cloud. What makes it so exciting for the small manufacturer is that cloud computing technology levels the playing field against larger manufacturers. In the previous era (20th century), enterprise resource planning (ERP) and manufacturing execution systems (MES) were intended mostly for large manufacturers, and as such required substantial upfront investment for the software, the infrastructure to run it, and the IT resources to maintain it. For today's small manufacturer, cloud computing options are far simpler to implement, and require less time and fewer resources to “go live” with no huge capital investment.

Ownership of Industry 4.0 initiative : Certainly, different functions within the organisation, such as IT and/or engineering, may claim ownership in an Industry 4.0 initiative. However, if it is not driven by senior management from the top floor to the shop floor, and embraced across the entire organisation, the success is likely to be limited. No one department within a manufacturing organisation can own something with such far reaching implications.

Many manufacturers have made no, or only limited progress, have neither an Industry 4.0 or IoT strategy, nor assigned clear responsibilities, and have not defined an implementation road map. One thing to remember with Industry 4.0-enabling technologies is that they are ultimately a tool. The software and solutions emerging in today's manufacturing industries are meant to empower the workforce, and improve operating processes, but they're not a magic wand.

Challenges : The main challenges include overcoming concerns about cybersecurity and data ownership when working with third-party providers in the cloud. Also, there can be difficulties in coordinating efforts across departments, no clear plans for the implementation or metrics to measure the success, inadequate resources, and difficulties with investing in necessary talent. Perhaps the biggest challenge is

to stay on course to push through such a radical transformation.

Industry 4.0 is having a significant impact on the industrial workforce. One of the top challenges will be how to deal with the lack of qualified employees, both from the perspective of retraining the existing workforce, and ensuring our educational systems are preparing their students with these fundamentally new skills. Other tasks that need consideration include concerns around data security and the excessive investment needs, and the implications of those investments on company budgets. Low prioritisation and lack of management commitment will be another significant challenge, perhaps the most difficult to overcome for some organisations.

New Technology Infrastructure : Smart, connected products require companies to build and support an entirely new technology infrastructure. This “technology stack” is made up of multiple layers, including new product hardware, embedded software, connectivity, a product cloud consisting of software running on remote servers, a suite of security tools, and a gateway for external information sources. In addition, there must be seamless integration with enterprise business systems such as ERP, product lifecycle management (PLM), MES, asset management and quality.

Until very recently additive manufacturing—and 3D printing—was described as “disruptive technology”. It is now mainstream and the reality for many manufacturers. By enabling manufacturers to produce prototypes, tools and final parts directly from CAD data, additive manufacturing creates dramatic reductions in delivery times and production costs, thereby increasing the speed of response to customer needs, and reactions to changes in the market.

How can ERP solutions address the needs of manufacturers in an Industry 4.0 environment?

It is clear that for manufacturers, growth in an Industry 4.0 environment will be intrinsically linked with a business's ERP solution. Today's modern ERP solutions can put manufacturers in a better position to meet the fast-paced, and connected requirements of Industry 4.0. Certainly, the boundaries between production and management must disappear, and ERP and MES systems must form an integrated unit if businesses are to realise the growth opportunities presented by this new age of intelligent manufacturing.

Source : www.smeworld.com



Indian Institute of Materials Management

MISSION

- To promote professional excellence in Materials Management towards National Prosperity through sustainable development.

OBJECTIVE

- To secure a wider recognition of and promote the importance of efficient materials management in commercial and industrial undertakings.
- To safeguard and elevate the professional status of individuals engaged in materials management faculty.
- To constantly impart advanced professional knowledge and thus improve the skill of the person engaged in the materials management function.
- Propagate and promote among the members strict adherence to IIMM code and ethics.

CODE OF ETHICS

- To consider first the total interest of one's organisation in all transactions without impairing the dignity and responsibility of one's office :
- To buy without prejudice, seeking to obtain the maximum ultimate value for each rupee of expenditure.
- To subscribe and work for honesty and truth in buying and selling; to denounce all forms and manifestations of commercial bribery and to eschew anti-social practices.
- To accord a prompt and courteous reception so far as conditions will permit, to all who call up on legitimate business mission.
- To respect one's obligations and those of one's organisation consistent with good business practices.

BLOCK CHAIN TECHNOLOGY AND ITS APPLICATION IN PORT LOGISTICS

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Introduction: The maritime transport plays a key role in today's world economy. 90% of the world's trade is carried by sea (Business.un.org, 2017). In spite of this already considerable importance on the world economy, the seaborne trade volume is growing at a rate of approximately 5% per year and it does not seem to stop any soon (Unctad.org, 2016). This trade growth not only turns ports into vital logistic hubs, but it requires them to operate in a more efficient and smarter way than ever before. Therefore, ports are asked to rethink and adapt their role based on these new market challenges. Today's port operations are characterized by a large complexity increased by the several actors playing a role in the port processes. For example, the import carrier process sees more than ten different stakeholders involved in the movement of the container from the vessel to the hinterland transportation. Therefore, large ports are required to develop advanced coordination methods able to facilitate and standardize the information exchange among the parties and, subsequently, increase the port throughput rate.

Information sharing and the process standardization can be achieved through a unified information system that addresses the high complexity of port processes (Posti et al., 2011). The literature uses the term "Inter-Organizational Information Systems" (IOIS) to define the information system that connects two or more companies with the aim of facilitating the communication among them. In other terms, IOIS are information systems that span the boundaries of a single organization (Chatterjee and Ravichandran, 2004). The potential of these information systems to lower the operating costs, boost the service quality and, consequently, improve the organization's competitive ground. Such systems are able to boost not only the single organization's competitiveness, but also the competitive position of the entire network of firms linked through the system.

Concept of IOIS : Inter-Organizational Information System (IOIS) can be traced back to 1966, when Kaufman saw that computer networks having the potential to improve the collaboration and coordination between different organizations in the supply chain in terms of billing and payment practices. In 1982, Barrett and Konsynski used the term "IOIS" for the first time to define the information system able to inter/intra-connect one or more independent organizations (Barret and Konsynski, 1982). Few years later, the IOIS was described as "an automated information system shared by two or more companies" (Cash & Konsynski, 1985, p. 134). In the late 1980s Johnston and Vitale (1988, p.154) expanded this concept as: "An IOS is built around information technology, that is, around computer and communication technology that facilitates the creation, storage, transformation and transmission of information.

An IOS differs from an internal distributed information system by allowing information to be sent across organizational boundaries".

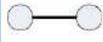
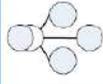
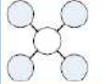
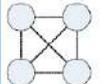
Architectural Type	Explanation
 Bilateral (1:1)	<ul style="list-style-type: none"> Point-to-point (P2P) connectivity. Direct connection between two trading partners. Connectivity in its most basic form. Works well for established partnerships.
 Private hub (1:N)	<ul style="list-style-type: none"> Hub structure that makes it possible to connect to many partners with minimal linkages. Internal applications need only one connection point. Standardized access for external partners. Generally initiated by a strong party, to link with many smaller parties.
 Central orchestration hub (N:M or N:1:M)	<ul style="list-style-type: none"> Like a private hub, but generally run by independent operator. Expected to work best in industries without dominant parties.
 Modular distributed plug & play architecture (N:M)	<ul style="list-style-type: none"> No permanent linkages – plug & connect capabilities. Parties connect when interaction needed, exchange information and conduct business. Standardization is critical.

Figure 2.1: Four Different Architectural Types (Baalen, 2008)

Fig: 1.1 Four different architectural types (Baalen, 2008)

Financial flow and INCO terms : In port logistics, the financial flow has a substantial impact on the physical flow, since a mutual dependency of the two flows characterizes some steps of the process. For instance, the physical flow of a container in the terminal area can be stopped and delayed in case the cargo has not been commercially released and the invoices paid. However, it is not possible to generalize the financial flow of the import carrier process in a universally valid description. The characteristics of this flow are dependent on the Incoterms chosen by the transacting parties. The word "Incoterms" is an abbreviation of International commercial terms and they are aimed to facilitate the trader's life (Ramber, 1999). A trade term is an acronym that encompasses a catalogue of delivery obligations to be performed by either the seller or the buyer (Malfliet, 2011). Using these notations, traders are not required to include extensive agreements regarding trade obligations in their contracts. They simply select one of the predefined incoterms, which specify both the party who is in charge of, and the one who bears the risks during and the costs of transport, insurance, documents and formalities. They are grouped in four categories: E-terms (only EXW): the seller's set the premises and the cargo is set at the disposal of the buyer ("come to collect the goods"); F-terms: costs and risks relative to the main international carriage are under the buyer responsibility ("goods are sent from"); C-terms: the seller pays the transportation but it does not bear the risks for the international carriage ("goods are sent to, freight prepaid"); D-terms: all costs and risks until the delivery point in the country of destination are hold by the seller ("goods are 'delivered at").

In Incoterms, the term 'delivery' identifies to the time when cargo responsibility shifts from the seller to the buyer. This shift in responsibility corresponds with

transaction of the payment. In case of E-terms, the payment takes place as soon as the cargo leaves the manufacturing company, preventing any process delays due to payment delays. Few process delays take place also in case of F-terms. However, C-terms and D-terms generate considerable delays in arranging the payments due to the shifts of responsibility along the process and the low coordination among the parties.

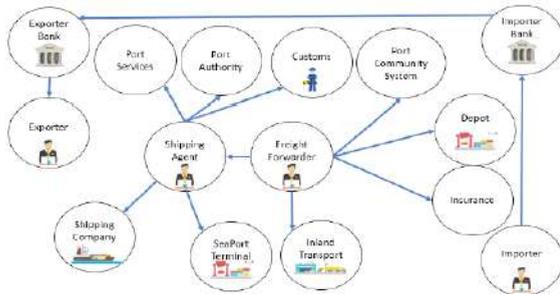


Figure 3.1: Financial Flow (Adapted from Baalen et al. (2009))

Fig: 1.2 Financial Flow (Adapted from Baalen et al. (2009))

Traditionally, the cargo-related documentation was passed from one to another actor who are part of the supply chain. This procedure was shifted with the implementation of the Port Community System, which represent a central-hub that collect and redirect all the information. A blockchain application would radically change the data sharing scheme, moving from data-passing (data push) to data-requesting (data pull). This new configuration implies that the cargo-related information is recorded on the chain by the information owner (the shipping agent, freight forwarder or shipping line in port logistics). This represents an insurance of information accuracy since there are no intermediaries between the information owner and the information user. Once the cargo-information is included onto the ledger, the parties that take part in the cargo physical flow get access to it. This business case of implementation leads to decrease the risk of documentation fraud, reducing errors in documentation and most importantly increasing the speed of the overall document transfer process. Unlike the paper copy or the electronic copy (PDF), the documentation stored in the block chain requires the approval of all the stakeholders and possible changes can be detected easily.

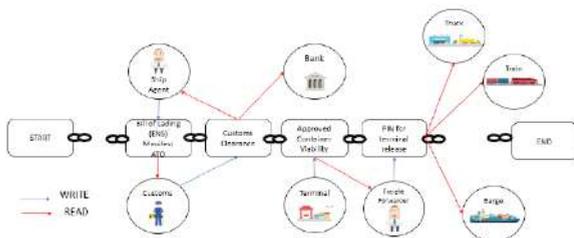


Figure 4.1: Example of blockchain application for cargo documentation storing

Fig: 1.3 Example of block chain application for Cargo documentation storing

Source: Baalen et al. (2009)

Conclusion: A decentralized distributed system to collect, store and manage key process information regarding each product throughout its process development. This creates a secure and shared record

of the process steps for each product. Since the process of product movement comprises a variety of actors (i.e. terminal operators, customs, shipping agents, freight forwarders, hinterland transportations, shipping line), this functionality allows a better coordination and a real-time access to process-related information. Each product (container) would be linked to a virtual identity on the network. Similarly, the process actors would also have a digital identity that will be used to sign the timestamp authenticity. Since block chain technology is still immature, much of the expected benefits provided by the technology are exaggerated in terms of impact by the parties who aim to profit from the technology implementation. This generates a huge hype on the block chain creating misunderstandings and misconceptions on the real benefits as well as potential use-cases. This is confirmed by Gartner, which identified the block chain at the peak of the hype cycle for the whole 2017 (Panetta, 2017). However, block chain is not a panacea for all sorts of problems that characterize today's logistics sector. This research demonstrated that some use-cases might have a positive outcome in terms of process optimization. However, the benefits provided have to be compared with the costs of block chain implementation to evaluate the real advantage provided by the technology.

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(Footnotes)

¹ IBS Mumbai, Powai, Opp. Hiranandani Hospital, Mumbai.



SOCIALLY RESPONSIBLE INVESTING: THE NEXT PARADIGM FOR BUSINESSES

ASHLEY MENEZES
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The need of the hour is to start the process of moving towards sustainable investing practices and being socially responsible, instead of a knee-jerk reaction when regulatory compliance becomes mandatory

Stakeholders now recognize the importance of responsible investing and the role of financial markets in fostering sustainable development.

Traditionally, investing has focussed around delivering financial returns. While the use of proceeds has always been important, the consequences on the environment and humanity has not been a consideration in decision-making. While some businesses have corporate social responsibility (CSR) programmes and some investors follow policies around ethical investing—avoiding sectors such as tobacco, alcohol, gambling etc.—there have only been a few such instances, and the implementation of these policies has been ad hoc and inconsistent.

However, times are changing. Globally, an ethical and long-term sustainable investing strategy is gaining importance. Stakeholders now recognize the importance of responsible investing and the role of financial markets in fostering sustainable development.

Firms and investors acknowledge that social and environmental issues can be material to the financial outlook of investments, and ultimately, their own performance. There is a noticeable trend, that, to the extent it is consistent with their investment objectives, investors are now looking to incorporate environmental, social and governance (ESG) issues as part of their decision-making processes.

ESG comprises the following dimensions: environmental—resource-depletion, renewable energy, clean-technology, pollution, climate-change; social—human rights, workplace-conditions, discrimination, community-relations; and governance—compliance, transparent reporting, managing conflicts.

Europe and North America have been the early adopters of ESG. Six EU countries have started a four-year project to implement circular models, where the focus is to use materials for longer and preserve their value through smart solutions. Corporates too are getting involved—a supermarket in UK only sells food that would have been discarded.

Ikea is expanding circular offerings by reselling used furniture and creating new products from leftover textiles.

Between 1940 and 1980, Costa Rica suffered from large-scale deforestation—it was stripped almost bare from a 70% forest cover.

The government enacted strict deforestation guidelines and rainforests are now back to 52%. The consequence of this environment-focussed decision, benefitted the agriculture industry, and the improving climate is attracting tourism, making it the top industry.

Why are ESG policies, that were once viewed as additional costs, now being embraced? The primary reason is a change in the awareness of the social and institutional environment. The interpretation of what constitutes fiduciary duties has also changed. Hitherto, the application of ESG criteria on returns on investment was believed to be in conflict with fiduciary duties. However, recent legal analysis has concluded that considering the intangible benefits of ESG is not a breach of fiduciary responsibilities.

Reports indicate that over \$2 trillion has poured into sustainable investments during the last two years, aggregating to almost \$9 trillion, or 20% of managed investments.

Analysis indicates that socially responsible funds have performed on par with peers. In fact, some analysts believe that as ESG algorithms improve, and as such funds gravitate towards finding better companies, rather than excluding bad ones, they may outperform conventional funds.

With stakeholders looking at indices and performance reviews in choosing products, business leaders are looking to improve their reporting standards. ESG can create a distinguished outlook for businesses. Firms look for new ways to differentiate themselves. There are studies that screen corporates and products based on sustainability—these studies evaluate ESG compliance, reporting, ESG-related controversies, etc., and rate firms alongside their peers. Businesses that have a high ESG rank will generate positive interest.

Of the three ESG dimensions, governance is considered to be most relevant in creating shareholder value, and is more visible. However, the materiality of an ESG dimension, and the type of ESG criteria varies across sectors and geographies.

While measuring ESG, environmental and social factors will have a lower weightage for a services business,

compared to an industrials business.

Similarly, nations with access to cheap labour will consider more social factors, while environmental factors will be more relevant for developed nations with higher levels of mechanization. ESG indices should be filtered and weighed, to reflect such differences. Currently, there aren't globally accepted standards to determine ESG scoring, but principles are being laid out and these standards should evolve.

While still at a nascent stage in countries like India, ESG is still an important issue. There is mounting global pressure on countries to enact legislation around climate-change, resource-depletion, pollution, human rights etc. and non-compliant nations face risks of a backlash.

The 2015 Paris Agreement on climate-change, signed by 194 nations, is one such initiative. While developed nations may differ from their developing counterparts on the applicability and extent of the standards and milestones, as well as the implementation time frames, there is a general consensus towards being more ESG-compliant.

India has enacted regulations around improving corporate governance, with requirements to have independent directors, more accountability, transparent boards, etc., addressing potential conflicts of interests of stakeholders. However, environmental and social norms remain low. Foreign capital plays a significant role in the Indian capital markets. As investors become more compliant, they may be forced to avoid businesses that do not meet their requirements, and this will affect the valuations of such firms.

Norway's Government Pension Fund Global (GPGF), the world's largest sovereign wealth fund, managing around \$1 trillion—put many Indian companies in the metals, coal and thermal power sectors on its exclusion/watch lists, citing human rights, environmental and climate-change concerns.

In April 2016, GPGF div-ested from 13 leading Indian coal firms and made strong observations on ongoing transgressions in operations and increasing, unaddressed human rights risks in a large Indian natural resource company. Several other top-league funds such as T-Rowe Price and Blackrock are also moving their portfolio to only include ESG-compliant businesses.

The need of the hour is to start the process of moving towards sustainable investing practices and being socially responsible, instead of a knee-jerk reaction when regulatory compliance becomes mandatory. Corporates need to be at the helm of implementing policies in the true spirit and being transparent in disclosing their actions.

Views expressed are personal.

Source : LiveMint, 23 November 2017



CONTRATULATIONS



PAUL GEORGE

Appointment of New Chief Commercial Officer

With effect from 1st October 2017, Paul George would be taking the position of Chief Commercial Officer for Schenker India. Paul would be replacing Marcel Opitz Director - Sales & KAM as he has moved to a new role within DB Schenker at Germany.

Paul George is a Mechanical Engineer and a certified CGLI (UK) by profession with separate Post-Graduations in Business Management, Materials Management and Foreign Trade Management from IIMM – Bangalore, apart from a Residential Business Leadership Program (BLP – EDP) at IIMA. He is also a certified Recruitment Analyst from Carlton Advanced Management Institute UK.

With over 35 years' experience in Quality Control, Planning, BPM, Manufacturing, SCM, Global Purchasing, Foreign Trade, Logistics and also setting up Plants at MAA, PNQ, USA etc. he has held senior positions in reputed Engineering / Automotive organizations and Leading LSP's. He has been an EC member, Vice Chairman and Chairman for IIMM Bangalore for very many years.

Currently he is also the National Council Member for IIMM –NHQ, Member of CII Institute of Logistics, Global Logistics Council, BACC and other leading Organizations in SCM. Lead Speaker at various Business & International Forums – FIEO, APCON, Industry Consultation on Regional Comprehensive Economic Partnership (RCEP), B- Schools, Management Institutes / Universities, SCM NeXT, IIMM, FKCCI, WTC, APCON, NATCOM, SCALE & Chemlog etc...

On a professional level with a strong Industry connect, IIMM has conferred him the Life membership for his outstanding contributions to Materials & Supply Chain Management. He has to his credit won various National Awards and recognitions from Industry.

His wife is the Vice Principal of a leading School in Bangalore and have 2 daughters who have completed Engineering & MBA. Elder is married and settled in Muscat, and the younger is employed at Genpact as a Business Analyst at Bengaluru.



INTERNATIONAL NEWS

LALBHAI PATEL
DIRECTOR - IFPSM
IMMEDIATE PAST NATIONAL PRESIDENT-IIMM
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“Dear Fellow members and Professionals.

It is my privilege to inform you all about the IFPSM Summit 2017 held at capital city Taipei at Taiwan on 22nd and 23rd September 2017, with the theme Sustainability Ensures Success. IIMM represented by 13 delegates to the Summit 2017 Taipei Taiwan.

The theme of the World Summit is “Sustainability Ensures Success”. During the inauguration on 22nd Mr. He Liming, President, IFPSM expressed great pleasure in welcoming the participants to the world summit. He assured two days of exciting and informative presentations by senior international key note speakers with marvellous opportunities to take back to their organizations.

Mr. Steve Lai, Hon. Chairman, SMIT, said that he is delighted to welcome to the Capital City Taipei and host our visit. He said that Taiwan is the 22nd largest economy in the world and their history can be traced back to prehistoric times when the island was actually joined to the mainland of China some 1,00,000 years ago. The world summit is an amazing opportunity for the profession to meet, engage and learn from each other. He urged us to maximize for our own development and our organizations by meeting new professionals from across the world and engaging with them through the various conference sessions and during the social occasions. The key note speech was delivered by Dr. H.E. Eugene Chien, Board Chairman, Taiwan Institute for Sustainable Energy, Taiwan. He mainly spoke on The global sustainable development confronts opportunity, challenge and prospect.

The global purchasing integrates the resource and

realizes the optimum resource distribution, cost saving, and value creation. The supply chain is an inter-enterprise cooperated organization form that realizes the whole process of designing, purchasing, producing, selling and service etc., by customer oriented, quality and effectiveness improvement as its objects and resources integration as its approach. The global supply chain is constantly breaking through the traditional geographical boundaries and has formed a new functional map with global connectivity.

The presentation was continued on sustainability and supply chain security. Global Economic trends in the coming decades was the next session by Mr. KamhonKan, Academia Sinica.

Day 2 . Saturday the 23rd Sept. 2017.

Second day of IFPSM World Summit started by 9 am with a formal welcome and review of the first day by Mr. Steve Lai.

The plenary was on THE UPDATES AND TRENDS OF 2017 PMI/NMI FROM CHINA AND TAIWAN. jointly presented by Dr. Chung-Su Wu, President Chung-Hua Institutions for Economics Research, Taipei and Mr. Cai Jin, Vice Chairman, CFLP, Beijing, China.

The next plenary was on Sustainable Procurement in the Public Procurement context. By Mr. Scot Dicken, Sr. Manager, Charles Kendall and Partners UK.

The World Summit was closed by the IFPSM president and the next World Summit is at Helsinki, Finland from 26th to 29th September 2018.



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EXECUTIVE HEALTH

HOW AIR POLLUTION INCREASES INDIA'S BURDEN OF DISEASE

DIPANKAR DE SARKAR

Indoor and outdoor air pollution made up more than 10% of the total burden of disease in 2016, second only to child and maternal malnutrition

I have just discovered, courtesy of the first such study conducted by the ministry of health and independent health agencies, that I live in the Indian region with the highest number of life years lost due to air pollution.

I'll explain.

That Delhi's air is among the foulest is well known—it's close to being declared a hardship assignment for foreign diplomats. What is new is that we now have a much better idea of exactly what this is costing the residents of Delhi in terms of their health and general well-being.

It's an internationally accepted measure called DALY, short for Disability Adjusted Life Years, and it is aimed at explaining what we see around ourselves every day—at work, on the street and at home. This measure gives you a good picture of the cost of a disease, or condition or environmental risk—not only in terms of death. One DALY, according to the World Health Organization (WHO), is one full year of lost healthy living per 1,000 population (in India, per 100,000). It is a measure of the burden of disease carried by a nation, region or sub-region.

On 14 November, the health ministry published a report on the Health of the Nation's States—a study of how the burden of disease has changed in Indian states from 1990 to 2016 (see page 18). The study is the outcome of research by the Institute for Health Metrics and Evaluation, a global health research institute at the University of Washington in Seattle; the Public Health Foundation of India, a premier public health institution in India with a presence across the country, and the Indian Council of Medical Research, the apex government body for the formulation, coordination and promotion of biomedical and health research.

This report defines DALY as “years of healthy life lost to premature death and suffering. DALYs are the sum of years of life lost and years lived with disability”.

The importance of this report cannot be over-emphasized. It is a landmark publication in disaggregated health data in India, a country that must make heroic efforts (including by massive increases in government

spending) to improve the health of its people if it is to enjoy the full benefits of its slowing but still rapid economic growth.

Essentially, the report shows that India is faced with the double whammy of increases in the burden of both lifestyle and infectious diseases. The first is commonly associated with sedentary lifestyles brought about by greater wealth, the second a classic indicator of poverty. Not surprisingly, the first category is dominant in wealthier states and the latter, alongside malnutrition, in poorer states.

This, in other words, is India's health gap.

However, cutting across both categories is air pollution. The report, correctly, makes a distinction between indoor and outdoor air pollution. Nationally, indoor air pollution, mainly the result of cooking with fossil fuels such as coal and wood, has come down markedly since 1990, but outdoor air pollution has increased.

The really worrying part? Taken together, indoor and outdoor air pollution made up more than 10% of the total burden of disease in 2016, second only to child and maternal malnutrition. The main risks from air pollution are cardiovascular and respiratory diseases—to which it makes a “substantial contribution”.

Broken down, the risk from air pollution was higher in the poorest states—these are eight so-called Empowered Action Group (EAG) states that receive special development effort attention from the government of India, namely Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttarakhand and Uttar Pradesh. This means the poor as ever will be disproportionately impacted by air pollution, unlike those who are able to afford air purifiers and good quality pollution masks, while benefiting from the protected environment of sealed and confined spaces such as cars and offices.

“The burden due to household air pollution is highest in the EAG states, where its improvement since 1990 has also been the slowest. On the other hand, the burden due to outdoor air pollution is the highest in a mix of northern states, including Haryana, Uttar Pradesh, Punjab, Rajasthan, Bihar, and West Bengal,” the report says.

The report says risks from outdoor air pollution increased due to a variety of pollutants from five sources—power production, industry, vehicles, construction and waste burning. As advocates of green development will point out, these are all outcomes of a path of development that ignores environment-friendly solutions.

What does the report recommend? Air pollution, it says, can be effectively dealt with “only if the efforts of the ministry of environment, forest and climate change, ministry of power, ministry of new and renewable energy, ministry of road transport and highways, ministry of housing and urban affairs, ministry of health and family welfare, and a variety of non-governmental partners come together.”

What the report does not mention is that there must be political will too—for political parties and governments ruled by them to firstly acknowledge the scale of this health emergency and then work together, sinking differences for the greater good. What’s been the policy response so far? One of jaw-dropping inefficiency and political bickering. In Delhi, air pollution is seasonal: with the onset of the winter, two things happen. On the one hand, paddy farmers in neighbouring Punjab, Haryana and Uttar Pradesh, having harvested the rice, start burning the leftover stubble in order to prepare the farms for winter sowing. At the same time, as climate scientist Krishna Achuta Rao writes in a recent article, “Like Los Angeles and Mexico City, Delhiites are cursed by geography to be prone to a meteorological phenomenon called inversion where warm air rests above the colder air closer to the ground, preventing it from mixing upwards, thereby trapping all that we put into it—almost like a lid.” This is an annual affair, but

the policy response has been marked by a complete lack of preparedness, and charges traded between the governments of Delhi, Punjab and Haryana that are ruled by three rival political parties, the AamAadmi Party, the Congress and the Bharatiya Janata Party, respectively. There are no signs that these governments are even prepared to work together, in contrast to the consensus (albeit not without its difficulties) that marks efforts to execute a single goods and services tax for the country.

Neither, surprisingly, has there been any firm signal from the Union government that there’s an emergency that needs to be dealt with. Delhiites are a beleaguered lot and a degree of resignation characterizes the popular response to this health crisis. “What’s the point of purifiers; we still need to step outside,” is something you hear commonly. Yet, pollution masks are now far more ubiquitous than they were a year ago.

The day the report was launched, 14 November, is celebrated as Children’s Day in India, which knows from bitter experience that environmental pollution can impact generations. For those looking to get away, I can offer you a quick data-based solution from the report cited above: the states with the lowest levels of DALY rates due to risks from air pollution (unfortunately, not disambiguated between indoor and outdoor) in 2016 were: Nagaland (1,409), Arunachal Pradesh (1,436), Goa (1,482) and Kerala (1,698). The national mean is an eye watering 3,469.

Dipankar’s Twitter handle is @Ddesarkar1
Source: Livemint, 17th November 2017



COMMODITY INDEX

Commodities	Days’s Index	Prev. Index	Week Ago	Month Ago
Index	2512.5	2512.2	2494.8	2478.3
Bullion	4789.9	4789.9	4742.9	4842.3
Cement	1858.5	1858.5	1858.5	1871.8
Chemicals	2433.1	2433.1	2433.1	2391.0
Edible Oil	1595.9	1594.3	1544.6	1517.2
Foodgrains	2194.9	2194.9	2170.0	2140.1
Fuel	2395.2	2393.1	2398.3	2339.9
Indl Metals	1736.2	1736.2	1706.5	1655.5
Other Agricom	2317.4	2317.4	2328.5	2342.4
Plastics	1661.6	1661.6	1659.9	1661.6

Source: ETIG Database dated 21st November 2017.

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NATCOM - SCALE 2017, held on 16-17 November, 2017 at Vivanta by Taj, M G Road, Bangalore



Mr. Srinivas V Rao Branch Chairman, Welcoming Chief Guest Dr. Annadurai, Director ISSC NATCOM SCALE - 16.11.2017



Mr. T V Venkatesh and his colleague Ms. Niyati Kala Speakers form Art of Living received Memento form National President



Appreciation Memento NATCOM SCALE 2017 hosting branch IIMM Bangalore - Mr. Srinivas V Rao Br. Chairman receiving memento from National President



MOU with Techno India University signed by IIMM team and Dr. Sen Gupta VC



Releasing of Book written by Mr. Rabi Narayan Padhi by Dignitaries



Releasing of Souvenir NATCOM SCALE 2017 by Dignitaries



NATCOM SCALE 2017 - A Group of IIMM Bangalore Team



NATCOM 2018 flag handovering to IIMM Aurangabad Branch by IIMM Bangalore team

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Sr. No.	Course	Duration	Eligibility	Exp.
1.	Graduate Diploma in Materials Management (GDMM)	2 Years	Graduate Degree in any Discipline OR 3 Years Diploma in Engineering / Other Similar Professional Courses OR 2 Years Diploma in Hotel / Hospital / Pharmacy	N.A. 2 Years 3 Years
2.	Post Graduate Diploma in Materials Management (PGDMM)	3 Years	Graduate Degree in any Discipline	N.A.
3.	Post Graduate Diploma in Logistics Management (PGDLM)	1 Year	Engineering Graduate with 2 years Exp. or Other Graduate + 3 years Exp.	
4.	International Purchasing and Supply Chain Management (IPSCM) Powered by ITC GENEVA	18 months	Degree in any discipline Proficiency in English	2 Years
5.	Certified Professional in Supply Management (CPSM), ISM USA	6 Months	4 Years Degree OR Degree less than 4 Years	3 Years in Supply Chain 5 Years in Supply Chain
6.	Professional Diploma in Public Procurement (PDPP) Powered by THE WORLD BANK	6 Months	Degree in any discipline or Diploma in Engineering / Pharmacy / Hotel & Hospital Management	
7.	Diploma in Stores Management (DSM)	1 Year	12th Pass + 2 years Exp. or Degree in any discipline.	
8.	Diploma in International Trade (DIT)			
9.	E-Learning Foundation Certificate Advanced Certificate Expert Certificate Certified Manager	16-18 Weeks 18-20 Weeks 4-6 Months 4-6 Months	Graduate in any discipline with No Exp. Graduate in any discipline with 1 Year Exp. Graduate in any discipline with 3 Years Exp. Graduate in any discipline with 5 Years Exp.	

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